

**Good Reading about Automobiles, Motors and
Cycles, and the People who Make and Use Them**

VOL. I.

NEW SERIES

No. 15

MOTOR AGE

Subscriptions
Domestic, \$2.00
Foreign, \$4.00
Single Copies,
Five Cents

With which is Incorporated
THE CYCLE AGE

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Age exceeds 5,000 copies. ::**
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page 34. :: :: :: :: ::

CHICAGO, APRIL 10, 1902

Columbia Automobiles

ELECTRIC

**IN SEVENTH YEAR OF
SUCCESSFUL SERVICE**

GASOLINE



Columbia Mark XXXI Runabout

This is our latest Runabout. Built on the successful lines of Gasoline Carriage construction. It has a double motor equipment, long wheel base, and the battery is divided so that the weight is equalized on both front and rear axles. Its radius on each charge is forty miles, and its maximum

SPEED, 13 MILES PER HOUR

WRITE FOR 1902 ILLUSTRATED CATALOGUE AND PRICE LIST

Electric Vehicle Co., Hartford, Conn.

Western Agency and Show Rooms, 267 WABASH AVENUE, CHICAGO

MOTOR AGE

WITH WHICH IS INCORPORATED CYCLE AGE

VOL. 1. NO. 15.

CHICAGO, APRIL 10, 1902.

\$2.00 PER YEAR.

Gasoline Locomobiles?

New York, April 7.—Officers of the Locomobile Company were seen by a MOTOR AGE man this afternoon in reference to a report that the company was about to take up the manufacture of gasoline vehicles.

"It is persistently rumored that your company is to take up gasoline vehicle construction," was ventured. "I can say positively that we are not building gasoline machines," was the reply. "I suppose you ask that from seeing Mr. Riker enter the office."

"If you are not making them, do you propose to do so?"

"I really know nothing of what the company proposes to do in this respect."

D. E. Rianhard, of the Overman Automobile Co., whose office is on the same floor with the Locomobile Company, volunteered the information that Mr. Riker's gasoline carriage, which his company is building, would not be completed in time for the endurance runs. Mr. Rianhard made no reply when asked when the Locomobile company would begin to turn out gasoline vehicles.

American Automobile Association

New York, April 6.—Little beyond preliminary organization work was done at the first meeting of the American Automobile Association Tuesday. The racing rules as agreed upon by the plan and scope committee at Chicago were ratified and will be printed at once.

President Searritt told a MOTOR AGE man on Friday that it would be 10 days at least before he could announce the committees, as he had to consult the various clubs as to their composition. The chairmen of all committees, however, will be chosen from the A. A. A. board of directors.

Plans for Western Shows

Denver, Colo., April 7.—The date of the Denver show has been definitely decided for May 12 to 17, inclusive, at Coliseum Hall. G. A. Wahlgreen, who will have charge of these shows, is on his way to the coast, where he will be able to decide the date of the San Francisco show, which in all probability will be held the first week in June, giving any of the exhibitors who may wish to cover both, time to get to San Francisco after the Denver date. It is fully expected that these western shows will repeat the success of the first bicycle shows held in these cities. If the proper entries can be secured, there will be a one day's racing on mile tracks, both in Denver and San Francisco, during the week of the shows. Detailed information may be had by addressing G. A. Wahlgreen, Denver, Colo.

The Washington Show

Washington, D. C., April 7.—The first automobile show to be held in this city was opened to-night in the Light Infantry Armory, which in years gone by was the home of several successful bicycle shows. When the doors were thrown open a well-dressed crowd made its appearance and the hall was soon filled. There are thirty-eight carriages on exhibition to-night and about a dozen more are expected during the week.

The Automobile Storage and Repair Co. shows a Crestmobile, one Waverly, a National and a line of sundries. The Buffalo Electric Carriage Co. shows four stanhopers. Kenneth A. Skinner exhibits his new De Dion touring car and two De Dion motorettes. Five vehicles fill the space of the Electric Vehicle Co. The W. C. Koller Carriage Co. shows the Rambler. Chas. E. Miller & Bros. exhibit one Reading. Schuyler S. Olds makes an attractive exhibit of four Oldsmobiles surmounted by a large electric sign. Two cars are shown by the American Darracq Automobile Co. The Friedman Automobile Co. has space but the wagons have been delayed in transit. The Automobile Co. of America shows a big 16-horsepower touring car, a surrey and one stanhope. The exhibit is in charge of F. G. Russell, assisted by "Wally" Owen. The American Cycle Mfg. Co. shows three Waverly's, two Toledos and a motor cycle. The American Electric Vehicle Co. exhibit one vehicle; the United States Automobile Co., one. Other exhibitors are the Porter Battery Co., Fisk Tire Co., Salamandine Boiler Co., the Rose Mfg. Co., John C. Rau, electric supplies; John C. Wood, engines, and Ben E. Dakin, safety locks.

The show is purely a local affair and from a spectacular view, does not hold the visitors long. The hall, aside from the signs and electric displays, appears very much like a large salesroom. Judging from the experiences of the exhibitors to-night, however, it will undoubtedly result in many sales.

Stinson Returns; Will Go Again

New York, April 7.—Will C. Stinson returned on the St. Louis on Saturday with P. A. Sheehan, his manager, and W. E. Tenzler, his pacemaker. A cinder in his eye on the way to Europe laid him up and physicians forbade him to race before May 1. He will return to Paris in October.

The new building at Chicago for the Electric Vehicle Co., reference to which was made last week, is to be erected at 1421 Michigan avenue. It will be 25x130 feet, three stories and will cost \$18,000.

FRENCH ATTITUDE HAS CHANGED

Peasants Petition Government to Allow "Their Race" to Proceed—Osmont Makes Wonderful Tricycle Records—Americans in Paris

Paris, March 22.—(Special correspondence.)—Signs are not wanting of a change for the better in the disposition of the public toward motorists, but not long ago the outcry was loud. On the morrow of the Paris-Berlin race chauffeurs were indiscriminately misrepresented as a lot of speed-mad ruffians whose wild career could be traced by the ruin and death left behind. They were a public nuisance and a plague. They were good only to be hunted like bandits. In one of our most fashionable seaside resorts an owner of a park had invented a trick by which a tree could be dropped across the road in front of every coming car, so as to bring it to a standstill. That was the time that dailies would coolly advise that pedestrians ought to carry revolvers and shoot any motorist who might offend them; when a member of the parliament would denounce every use of horseless cars and the whole assembly, irrespective of party, cheered the orator; when the government pledged its word that no race would be tolerated under any pretense, and that a fresh ukase was in store for us, by which all motors would be provided with a big number—the awful big number—and their speed through towns and villages brought down to the limit of a trotting horse's pace. And the ukase came to light, and motorists were outlaws and outcasts in the land!

BUT NOW THEY WANT RACES.

Now the cloud has passed away. Nobody seems anxious to have races prohibited. Just the reverse: People in the sunny south, along the Riviera, and nearer to us, have posted on the classical Paris-Bor-



Map Showing Nice-Abbazia Course.

deaux course petitions to have "their race." French peasants, you see, are shrewd fellows, who can grasp a situation. Having come to realize that alcohol is a motive force, and as such a likely substitute for gasoline, the foreign fuel, and consequently that mechanical locomotion might be the desired means for them to

dispose, at good terms, of their alcoholic goods, they have been converted to motorism.

THE GOVERNMENT PROMOTES A CONTEST.

Town people, who have not the same substantial reasons to change their mind, may not be quite so favorably inclined towards us, but, for all that, they are getting acclimated to the sight, smell and roaring of the fire-horse. So in this direction, too, the outlook has cleared. But, to sum up the matter, here is one tangible proof of the happy change in the surroundings: The government, which was to bar all races, is the promoter of a race, the Alcoholic Northern Circuit.

HOW MOTORISTS ARE LIBELED.

One shouldn't imagine, though, that the anti-motorist is altogether extinct. We have still some specimens, too full of life and ire to be ranged among the fossils. Only a few days ago one of our foremost writers, M. Daudet, in a great daily's leader, devoted to the perils which surround the pedestrian in a Parisian street, proceeded to define the motorist as a quiet citizen who has been turned out by the magic of some unexplainable deviltry into a murderer thirsty with speed and blood. The Parisian street he calls "tragical." As to the country road, it is "a railroad less the rails," free to all but unarmful strollers.

Paris itself he considers a sort of hell; since it has, "thanks to progress, thus far Americanized itself." And he winds up his diatribe by quoting the satirical sentence of old Gavarni, the great caricaturist, who was a contemporary of the first railroads: "What's the good of speed, if by hundred-folding speed, you hundred-fold the wish for speed?"

And maybe there is something in the sentence.

A SAD ACCIDENT.

Just as if to substantiate the charges raised against the fire-horse by the irreducible party. M. Zuellein has been knocked down and killed by M. Schliemann, on the great boulevards. It appears the fault lies entirely with the chauffeur, who was driving too fast. The accident has created a great sensation in Paris, where both the motorist and his victim were well known. The press has raised in arms again and will cause fresh coercive measures from those in office against the "teuf-teufing" fraternity. Occurring at a time when opinion was quieting down and the government looked like relaxing from its former severity, the sad accident is doubly deplorable.

OSMONT'S WONDERFUL TRICYCLE RIDES.

Though the spring is young, records have already been falling like the proverbial autumn leaves. Thus early it is possible to prophesy that the present season will see great alterations in the time table. The mile a minute on a tri is hardly a myth now, and with a fair amount of luck would become a reality before long. I have in mind Osmont's latest achievements on a three-wheeler. He has just ridden the 50 kilometers (31 miles and something) in the wonderful time of 33 minutes 12 seconds, and could have kept on

at this gait up to the 100 kilometer mark easily, had he not met with hostile fate in the form of a policeman, who saved Father Time from a more severe thrashing.

The roads, heavy from recent rains and blizzards that blow at this period, and general surroundings, go far to enhance the merit of the performance. In the course of his attempt Osmont reeled off 2 kilometers in 1 minute 12 seconds, or at a 100 kilometer (62 miles) gait; and after the trial was over he climbed a 9 per cent gradient at an 80-kilometer pace. That speaks volumes for the skill and pluck of the man and the power of the mount!

AMERICAN VISITORS.

M. M. Vanderbilt and David Wolfe Bishop have been France's guests, and very welcome guests, too, for the last week or so. They intend spending a little time trying their luck in some of the big road events. Mr. Vanderbilt made straight for Stuttgart to fetch his new Mercedes, a splendid piece of machinery of 1902 design, from the Cannstatt plant, reported to be equal to a 110 kilometer pace. The journey back from Stuttgart to Metz was accomplished inside of 8 hours. At the time of writing the distinguished chauffeur had not quite made up his mind whether he would take part in the Nice-Abbazia race.

The doings in the forthcoming road battles of the

American will be watched with keenest interest by his fellow competitors and all continental sportsmen, and should he be successful no one will begrudge him his laurels.

England's Youngest Chauffeur

The youngest chauffeur in England has been discovered. Teddy Jarvis is his name, his age being thirteen years.

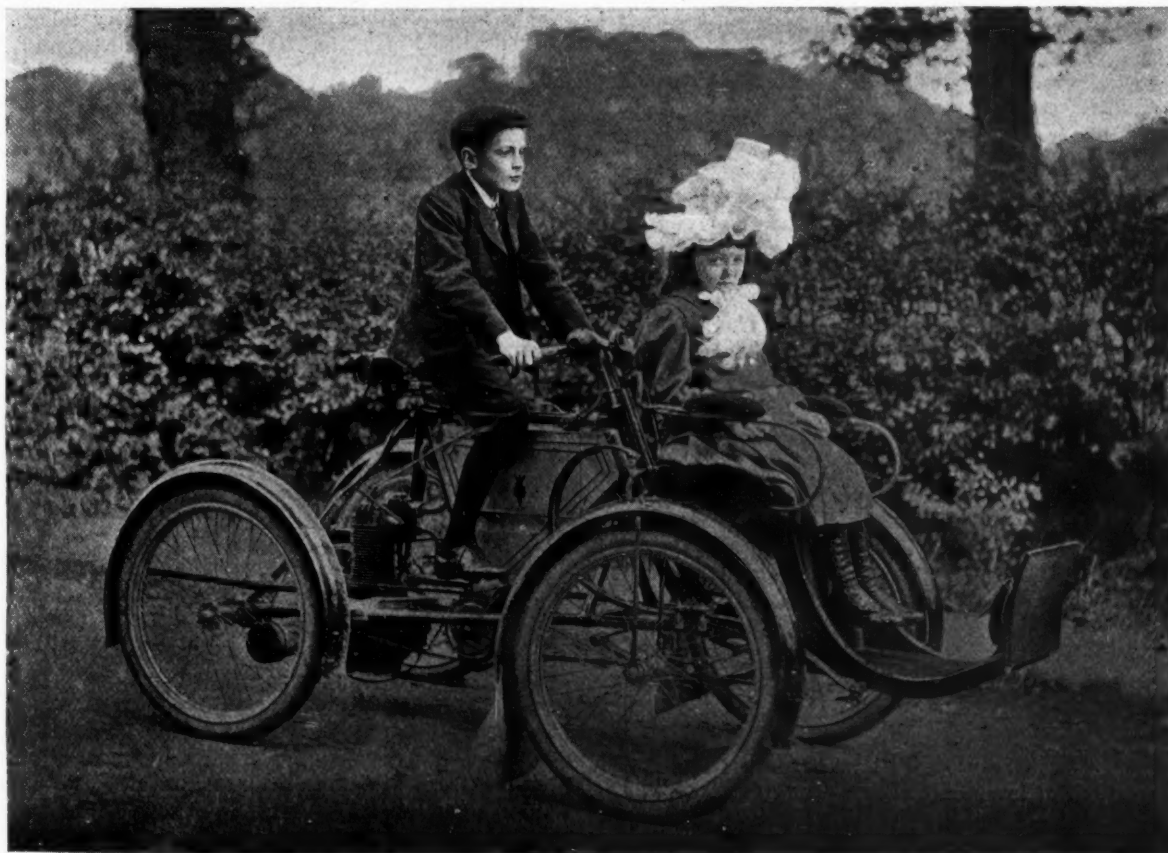
There are youthful violin prodigies, boy musicians, and baby artists. Why not a boy automobilist?

To drive a 2½-horse Ariel quad with his father or sister as passenger is the constant delight and recreation of Teddy Jarvis.

The boy had just returned from afternoon school. So soon as his natural shyness was overcome, he spoke freely of his motoring experiences, and displayed a surprisingly practical knowledge of motors and their mechanism.

He began to handle the levers about three years ago. His father took him out on a small Benz car, and in the quiet country roads gave him a series of practical lessons in motor control. The strain of steering was naturally too great at first for the lad's arms, but use has enabled him to stand prepared for all emergencies.

The picture was reproduced from that excellent publication, *Motoring Illustrated*.



TEDDY JARVIS AND HIS SISTER ON THEIR 2½-HORSE-POWER QUAD.

MOTOR AGE

PUBLISHED EVERY THURSDAY BY SAMUEL A. MILES.

Principal Offices: 324 Dearborn Street, Chicago.

Eastern Offices: 150 Nassau Street, New York.

TELEPHONE NUMBER, HARRISON 3534.

MOTOR AGE is entered at the Chicago Postoffice as second class matter.

To ADVERTISERS: Copy for advertisements must reach the Chicago office not later than Tuesday morning to insure insertion the same week.

The circulation of Motor Age, guaranteed and proven each week, exceeds 5000 copies. For proof and advertising rates, see last page of reading matter.

Motor Age may be obtained, by any newsdealer, through the Western News Company, Chicago, or any of its branches, which are located in every large city in the United States.

The editor will be glad to receive communications for publication. They must be accompanied by the names and addresses of senders, which will not be used if request be made to that effect. Contributions will not be paid for unless accompanied by notice that payment is expected.

Subscription, Two Dollars a Year. - - Six Months, One Dollar.

The condition of the automobile industry reminds one forcibly of events in the early history of the cycle trade. To the onlooker and to the younger people engaged in the business the opportunities to amass wealth appear boundless, the business in sight is limitless, the automobile industry is to become one of the greatest on earth. To the more conservative and older heads, the rush of orders and the publicity given to the fact that makers are unable to keep up with the demand made upon them, mean danger of overcrowding the market. It means that there is danger of the business being overdone and that a period of depression and scant profit will be necessary to remove those makers whose goods are not required or whose purses are not sufficiently plenteous to enable them to endure until the turn of the tide.

It is, perhaps, the duty of the automobile press to use all honest methods to assist in the development of automobilism, but MOTOR AGE does not believe it the part of wisdom to dwell at too great length, or with too great regularity, on the marvelous successes so frequently claimed but in reality so rarely realized. The industry has attracted the attention of many persons with money to invest with the result that the columns of this paper, and others, show a dozen or more new concerns organized every week to manufacture automobiles or their parts. This looks like prosperity. It is really an indication that capital, seeking investment, is being poured into the automobile business just as it poured into the cycle trade, as a likely source of large profit.

Comparatively few of the companies organized produce anything for the market. They are frequently the creations of inventors with "hopes." But if one in six ever commences turning out vehicles there will, in a few years, be so many disgusted people because of the inferiority of the machines they have purchased

and so many good machines unsold as to result in a temporary demoralization of the market.

Over a year has elapsed since MOTOR AGE devoted considerable space, and was laughed at, by some people, for its pains, to an article on this same subject. It was remarked that, while, for a few years, there would be a pressing demand for light carriages for pleasure too many people were giving attention exclusively to that branch of the business and too few to machines for commercial purposes. And day by day the statement is verified. The reasons for this are obvious: First, the amount of capital required is comparatively small; second, a great many of the parts can now be obtained from specialists; third, it is easier to follow in the steps of others and copy than to originate and test new devices; fourth, the production of heavy wagons requires time, money, and ability to develop new ideas.

The late show demonstrated that this year, at least, and possibly for two or three years to come, the demand for light runabouts will be enormous. At this moment purchasers are practically begging for deliveries. This merely indicates, however, that other makers will be attracted, that the insufficiency of supply will soon be at an end, and that the principal consideration, thereafter, so far as machines of this type are concerned, will be how to produce so cheaply as to be "a little under the market." Indeed, preparations are now being made by at least two makers to do that very thing. Meanwhile the demand for freight wagons and buses for country stage lines grows apace. There are about twenty-five makers who profess to make machines of this class. Twenty of them, at least, would be unable to supply a successful machine within six months of the date of an order. Surely the moral is plain.

Another Australian subscriber writes that activity in the automobile business is commencing there, and there is talk of starting a bus line or two and other signs of movement. He makes the same complaint as all other Australians relative to the exceedingly high price of gasoline, says that stove gasoline costs about 25 cents per gallon less than 70, and wants to know whether it cannot be used in gasoline vehicles. He thinks there is a chance for some wideawake oil exporter to do a splendid business.

Things Motor Age Would Like to Know

Whether it is true that a maker of steam carriages is preparing to make gasolines.

The future occupation of a celebrated designer of electric vehicles.

Why we have so few builders of heavy wagons for commercial use.

What the American Motor League is doing to boom the membership.

What the other fellows think about that 5,000 circulation.

When the Chicago club will take an active part in the necessary reforms.

The name of every maker who can supply carriages for stage lines.

THE WEEK IN BRIEF

American Bicycle Co. shares show remarkable improvement.

Colonel Pope resigns chairmanship of board of directors of American Bicycle Co.

Shareholders pass vote of confidence in directors of Canada Cycle & Motor Co.

Annual meeting of Canadian Wheelmen's Association held at Toronto.

Over 2,000 miles of cycle paths and only 45 miles of roads built in New York state in 4 years.

Court of appeals decides that Washington automobile buses do not need licenses.

Washington police department investigating arrest and release of O. H. P. Belmont.

Twin City 2:30 Limited Club organized by Minneapolis and St. Paul cyclists.

New stage lines to be operated in nearly twenty cities.

Denver show will be held in May.

Many sales recorded on opening night of Washington show.

Jay Eaton's petition for forgiveness refused by N. C. A.

Stinson returns from Europe.

Maryland legislature forbids exclusion of automobiles from the parks.

Nice-Abbazia race declared off because of the withdrawal of permission by the Italian government.

Convention of automobile dealers at Washington this week to form a national association.

Police put an end to Osmont's road record trials in France.

Cleveland Automobile Club will hold races in June.

Toledo Metal Wheel Company sued by American Bicycle Company for alleged infringement of the Smith bottom bracket patent.

Long Island Automobile Club has already received nearly twenty entries for its endurance on April 26.

American Automobile Association assumes control of racing and adopts rules.

The White Ghost, formerly owned by Vanderbilt, sold to John W. Gates and shipped to Chicago.

Kings County Wheelmen, of Brooklyn, changed constitution and will admit automobilists.

New York Athletic Club organizes an automobile division. League of American Wheelmen committees appointed by the president.

Persistent rumor in circulation that Locomobile company will make gasoline vehicles.

The difficulty under which automobilists in California labor are shown in the making of plans for a run to San Rafael. It will be necessary for the Automobile Club of California to charter a special steamer, the ferries refusing to carry the machines. It has been said that the club is considering the renting of a country house and 37 acres of land, but the story seems to lack foundation.

Unfortunately the Nice-Abbazia race has been declared off despite the fact that 90 entries had been made and a vast sum of money expended in preparation. This is due to the withdrawal by the Italian government of its permission to race through Italy. This action is said to be due to the fact that a number of racers, making a preliminary journey, made such speed

as to create a panic among the peasantry, none of whom had previously seen a motor car. Some idea of the commercial injury wrought by the interdiction may be gathered from the fact that the Automobile Club de Nice alone spent 15,000f (\$3,000) upon the preliminary details, the entire length of the route having been gone over, the starting and arriving points established and road keepers, etc., appointed.

Writing under date of April 3, relative to the convention of dealers to be held in connection with the Washington show this week, General Manager Washington says: "We have sent out several hundred personal letters to automobile dealers and expect to have a number here. How many, I cannot estimate, as they reply that they think the time selected is at the busy season of the year. We will go ahead and organize and let the dealers who cannot be present come in when they can.

Springfield, Mass., ever famous and progressive in the matter of racing, expects to obtain from the American Automobile Association Sanction No. 1 for its coming meeting.

Excessive speed by the automobile of O. H. P. Belmont is causing some excitement in the Washington police department. That gentleman was recently arrested and escaped on the somewhat small plea that as a member of congress he was exempt. Some of the authorities feel, however, that the policeman, who was mounted on a bicycle, did his duty. He showed that the Belmont vehicle was traveling at 23 miles an hour. People prominent in social and official life have been arrested on previous occasions, and some of them have paid fines. Why there should have been any discrimination in favor of Mr. Belmont or his employe has not yet been made clear to the superintendent. Speaking of the case the superintendent of police said he had called upon the police lieutenant for a full report in writing upon the case.

Among the entries for the Paris-Vienna race is Mlle. Bellamy de Meulle. Inasmuch as it is also reported that the lady will use a machine of 125-horsepower, the story is probably a fairy tale designed for advertising purposes.

In 1901 eighty-seven complete automobiles were imported into Belgium from Germany, England, France and Holland. Their value was \$82,017. The duty levied on the machines amounted to \$8,439.60. The exports of vehicles made in Belgium amounted to \$171,583, representing 214 automobiles. Motorcycles to the number of 149, valued at \$19,080, were exported during the same time. The import of the latter variety numbered forty-eight machines, valued at \$6,357.60.

Nelson C. Morris, a grandson of Nelson Morris, 10 years of age, who has just been granted a license, is said to be the youngest licensed operator of an automobile in Chicago.

CONSTRUCTION OF A TWO-CYCLE BICYCLE MOTOR

One of the principal difficulties encountered by builders of two-cycle air cooled motors for motor bicycle use has been due to the adoption, in nearly every case, of the conventional lines of the marine type of two-cycle motor, the water jacket only being discarded, and an air cooled two-cycle motor with outside flywheel made instead. A two-cycle motor of the marine type is not susceptible of high speed, and consequently is of low power compared with a four-cycle high speed motor of the same, or even smaller dimensions. This is due to the low compression in the crank chamber, into which the mixture is usually drawn from the carburetor or mixing valve. For example, we will take a two-cycle motor of the marine type with outside flywheel, and of the same bore and stroke as the two-cycle bicycle motor about to be described and illustrated. The clearance in the crank chamber, or space which can be occupied by the mixture, is about 150 cubic inches, and the piston displacement about 25 cubic inches; therefore the compression in the crank chamber, when the piston has reached the end of its downward stroke, will show on a pressure gauge approximately one-fifth of an atmosphere or about 3 pounds per square inch. At high speed the compression in the crank chamber is not sufficient to force a full charge of mixture into the cylinder, when the piston has reached the lowest point of its stroke and uncovered the mixture inlet ports, on account of the infinitesimally short space of time allowable for the operation. If, however, the four cycle type of bicycle motor, with the flywheels located within the crank chamber, be used, the compression in the crank chamber will be greatly increased.

To illustrate this we will take the motor about to be described. The clearance or capacity of the crank chamber is about 200 cubic inches. Deducting from this the cubic contents of the flywheels, which is about 125 cubic inches, we have only 75 cubic inches left for the mixture. The piston displacement is 25 cubic inches, as before. We then get a compression of about one-third of an atmosphere or approximately 5 pounds gauge pressure or 60 per cent more than in the marine type of two-cycle motor. This will give an increased velocity to the mixture in its passage from the crank chamber through the passageway and inlet ports into the cylinder.

Figure 1 is a side elevation of a motor, showing the exhaust pipe connection and the ignition case, the facing upon which the mixing valve is located and the boss for the drain cock to remove surplus lubricating oil from the crank chamber. There are twelve radiating ribs on the cylinder and the same number upon the cylinder head, in which the spark plug is located.

Figure 2 is a vertical cross section through the motor,

showing the piston, connecting rod and flywheels, the pipe forming the passage for the mixture from the crank chamber to the inlet ports in the cylinder, and the deflector on the piston to cause the incoming charge to take an upward direction and thereby assist in expelling the burnt gases from the cylinder.

For the benefit of those who are not familiar with the operation and construction of the two-cycle type of motor, a short explanation will be given. Upon the upward stroke of the piston a partial vacuum is created in the crank chamber. This draws the necessary sup-

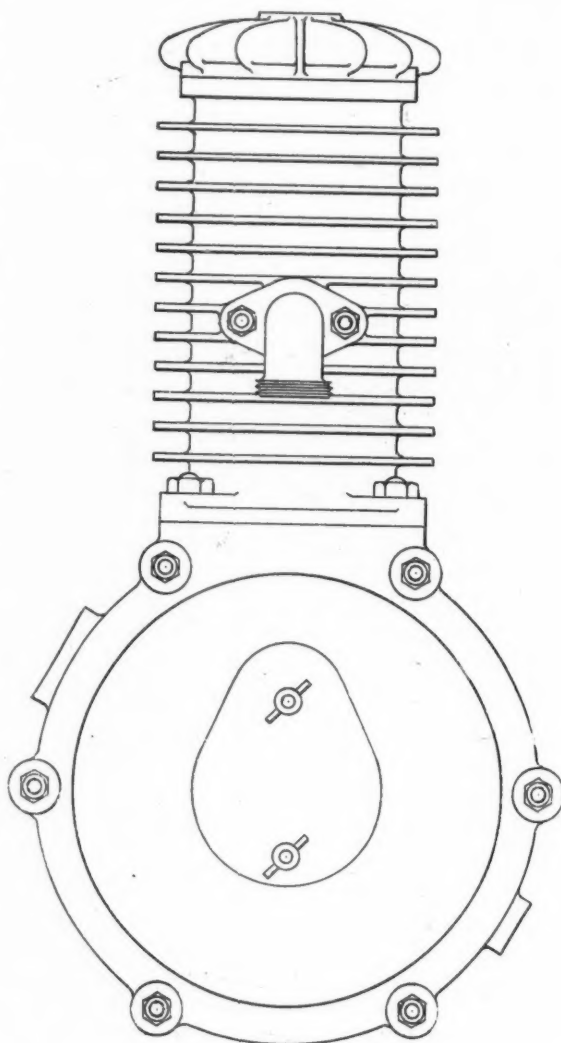


Figure 1.

ply of gasoline and air through the mixing valve, which is located upon the facing, shown upon the crank chamber on the upper left hand side in Figure 1. When the piston has almost reached the end of its upward stroke the previous charge is ignited and a downward impulse given to the piston. On reaching a point at about four-fifths of its downward stroke, the piston uncovers the exhaust ports, which allows the burnt charge to escape. As the piston continues to descend the ports for the admission of the mixture are uncovered, this commencing at a point about six-sevenths of downward stroke of the piston. The velocity of the incoming charge then forces out most of the burnt gases remaining in the cylinder. The inlet ports remain uncovered until the piston ascends one-seventh of its upward stroke. The piston covers the exhaust ports at one-sixth of its upward stroke. The compression of the mixture now takes place, continuing until the piston is almost at the end of its upward stroke, when the ignition of the com-

pressed charge takes place, and the operation is repeated.

This type, if properly constructed, will give as satisfactory results as a four cycle motor, and has the added advantage of greater simplicity, less vibration and the absence of all gearing and cams. It is practically valveless, having only the mixing valve, which is located upon the crank chamber as before described, and which is entirely away from the heated portion of the motor.

There are two methods of controlling the speed of this type of motor, first by the ignition, which is of course in use on all four cycle bicycle motors, and, second, by means of the throttle valve in the pipe connecting the crank chamber to the inlet ports in the side of the cylinder. The latter method is a desirable feature, as it gives a mixture of uniform quality which may be diminished or increased in volume at will. This is not possible in a four cycle motor without manipulating both the air and gasoline controlling devices. The throttle control just described, when once set, needs no further adjustment. The construction of this type of motor is simple, as may be seen by reference to Figure 2, and any mechanic with ordinary bicycle shop equipment can successfully build the motor if the description and drawings are closely followed, and attention be paid to the details.

The cylinder, cylinder head, flywheels, piston and piston rings should be No. 1 Cleveland gray iron or some brand of equal quality. The crank chamber, crank chamber cover, connecting pipe between crank chamber and cylinder inlet ports, and ignition case cover are of aluminoid. This aluminum alloy should be used in preference to aluminum, as commercially pure cast aluminum is extremely liable to be porous and brittle. The contact maker cam for the ignition should be of phosphor bronze, as also the exhaust pipe connection elbow and the crank shaft and connecting rod bushings. The crank and wrist pins and crank shafts should be made of annealed tool steel of good quality. The connecting rod should be of cast steel of high grade or a steel or wrought iron forging can be used instead.

The general dimensions are as follows: Height over all, 17½ inches; width of crank chamber, 5 inches; outside diameter, 8½ inches; width, over all, 9 inches; bore, 3 inches; stroke, 3½ inches. The horse power should be 2½, at from 1,500 to 1,800 revolutions per minute.

The next article will describe and illustrate the details of the cylinder, cylinder head, piston and piston rings and connecting rod, etc.

Three representatives of the Olds company, who are making a tour of Ohio, have decided to locate a branch in Toledo. It is understood that a large store will be leased in the Erie building.

Charles N. Schwab, president of the United States Steel Corporation, has been elected a member of the Automobile Club of America.

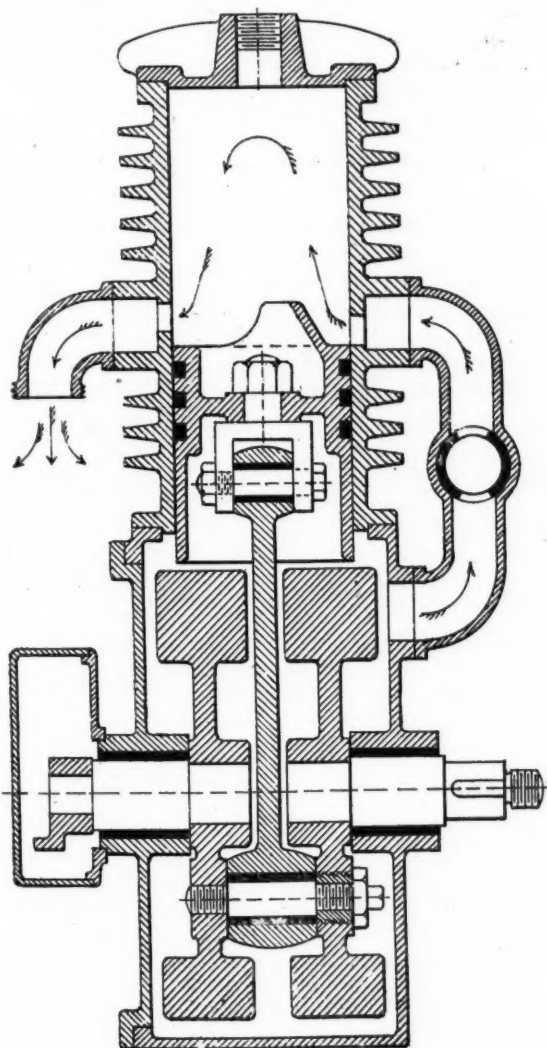


Figure 2.

CYCLE SPORT IN FRANCE

International Contests Now in Progress—Meyers Returns to the Path—Opinions Divided as to Correct Size of Tracks

CYCLE SPORT IN FRANCE.. . . .

Paris, March 22.—(Special correspondence.)—The goodly spring is with us and the sport hangs on his back wheel. Good health to both!

Buffalo II, which has risen out of the ashes in a truly Phoenix fashion, is being neatly dressed and will be equal to all emergencies. So is the "Parc des Princes" at Auteuil. All the cracks have set to work in earnest, and they have little time to spare, as the first meet of what looks like a very eventful season is to take place tomorrow, March 23, when will be contested the preliminary round of the classical Easter Grand Prize, the semi-finals and final to come off on the following Sunday morning. Buffalo will start off on its own account, one week after the rival grounds, and has already issued its April racing agenda, so that cracks will have their hands full for some time.

AN INTERNATIONAL CROWD.

With Major Taylor, Lawson, Stinson—who, by the way, has not been enjoying the best of health since he landed—and H. Elkes, the latest arrival from abroad, and possibly Kramer, America is to be very strongly represented. Chase, Linton and Hall will fight for old England, and are to be reckoned with. The stayers from the other side will be opposed by Bouhours, Robl, Dickentmann and Ed. Taylor, while most prominent among those that will do battle with your sports I will single out Jacquelin, providing he recovers his old form, Ellegaard, Arend, Butt and that veteran of the path, Meyers.

MEYERS' RETURN TO THE PATH.

One has not forgotten that Jacquelin's latest rival, who was considered by many as the coming champion of the world, had said his final farewell to the path, though he was not much over 20. To Meyers stands the credit of winning the biggest race on record, that Exhibition Grand Prix, with the 15,000f purse. His early retreat was considered a great loss to his country and to the cycling world, where the "Boer," as they called him, had made countless friends not only by his sterling qualities as a rider but also by his gentlemanly and sportsmanlike behavior. But the fever proved too much for him and he has decided that he will have one last try. His return to the scene of his fame and glory will add enormous interest to the forthcoming battles of the wheel.

THE LARGE AND THE SMALL OF IT.

Rather than dwell at length on the doings of half trained athletes, we will tackle, from a Frenchman's standpoint, the question of the advantages and drawbacks of the small track compared with the large. French opinion is evenly divided and rather excited on the point. From a theoretical standpoint many of us still do prefer large tracks with very long and broad straights, because small ones favor, in some measure,

recklessness, trickery and monkey, or head work, as you will have it, and you can never be quite sure that the man who hits the tape first is the fastest man. But this is looking at things as they should be, and we must consider them as they are; and that makes all the difference.

CHERISHED HOPES DECAYED.

Once upon a time we cherished the hope that the sport could be raised to the same high level of excellence as the old dignified sports, which have become national institutions, thanks to a splendid organization. But it didn't. Bad ruling is to be blamed for this falling down from our lofty ambitions to present day's realities. The bicycle sport is little better than a theatrical sort of enterprise, with the "gate" for its main object. So we are bound to deal with it from the spectacular standpoint.

TREATED AS A SPECTACLE.

Well, from a spectacular standpoint, even the staunchest believer in half or third-mile tracks will grant that a small—let us say a third of kilometer or at the utmost a quarter-mile—track is vastly superior to the bigger article. Take the Parc des Princes 666 meters cemented ribbon, for instance. No doubt down that beautiful stretch the men can fight it out honestly, and the fastest generally wins, though tactics do play there and will play a prominent part in any bicycle race, until each man has his own course cleared out and limited for him as sprinters have.

That much for the actors. But what of the spectators perched on the grand stand? From that lofty, distant, superhuman position the racing drama sinks down to a sort of miniature farce, with puppets, instead of athletes, awheel; on the shining whiteness of the far away bankings, the men in the play maneuvering positions are but dark, little, gliding spots, not much bigger than flies promenading on the side of a washstand; and when watching them, from the further end of the tribunes, as they rush down the interminable straight, you cannot realize the speed at which they are traveling, nor their exact placing. Then, even in the fury of the sprint home, when putting every ounce of energy into every pedal stroke, they seem wobbling, but for all that, crawling pigmies; and when they crawl—well, it is too bad. No wonder the public, I mean the grand stand public, remains undemonstrative, compassed and cool. Fine sport, maybe, but too tedious.

How different on a small track! where the actors and spectators are at close quarters; not one move of the former is lost to the latter; the public is responsive to every effort of the riders, who keep passing and repassing in front of him twice a minute, and never give his enthusiasm a chance to cool, so that excitement runs high at every spurt or semblance of it. The scene is lively from start to finish and fever heat is easily reached.

LOOKING BACKWARD.

A glance backwards will show that the story of the

Parisian cycle tracks has been revolving in a circle, and we started from the small track and revert to it. Leaving aside the Courbevoie path, which lies in the suburbs, the Cognac track, Buffalo, was the first bicycle track in Paris, and fourth in France (the first was the 180 meter; that's for the small cinder path built at Montpellier in the early eighties by M. Eringuier). Buffalo was designed and managed by that enterprising Englishman, H. O. Dupcan, whose name is so intimately connected with that of our early cycling. Many pleasant recollections seem to hover around those magic syllables, Buffalo, and we can remember more than one exciting afternoon spent there. The track was close at hand, the spot was attractive and very Parisian-like, but it was enlarged as time went by, and men grew faster. Then the track was too small, and the Seine Velodrome, with its 500-meter circumference, rose out of the ground, and Buffalo was left in the cold. But the Seine itself was not thought large enough yet, and we went one further with the Auteuil 666-meter path, truly a magnificent piece of cement. And this time the climax was reached. Now we are coming back to our former loves, as the song says.

ACCORDING TO AMERICAN IDEAS.

But it shouldn't be supposed that the new track is an exact reproduction of the old Buffalo. Breyer's path has been designed on new lines, American lines, in fact. The feature of our former small track was that everything had been sacrificed to the final straight, with the result that the bankings and curves were not straight, being almost perpendicular, and the spurt having to be delayed to the last, was a very short one. Most races were nine and three-quarters laps loafs, with a quarter-lap burst of speed to crown it up. Now the radius of the curves has been considerably extended, in order to allow of the very highest rate of speed at every inch of the circuit; the cement band has also been broadened, so that instead of the usual loaf—very much in evidence on the large track, too, by the way—and wild sprint home, the struggle will be an active one round the 300 odd meters of the circumference, and we shall get rid of that objectionable waiting race, which did so much to spoil a good thing.

BETTER SPORT WILL RESULT.

To put it in a nutshell, better sport and more exciting, too, will prevail in the end, and the new track is bent to combine the theatrical and sportive elements as closely as they may well be under present conditions. Then again, the creation of a second path will infuse fresh life into the sport. As long as there was but one track in the capital, the manager of same was master of the situation and ruled cycledom like a pasha does his district. The U. V. F. was little more than a trump card in his hands; so much the better for his private business, but so much the worse for the sport. Matters will change. The antagonism of interests at stake will restore some kind of balance in the realm of racing. Between the two rival parties the official body will have a chance to creep in again and retrieve part of its inde-

pendence and power, while that very rivalry of the "great" and "small" will lead to keener and healthier competition.

V. V.

HAS A BAD RECORD

The White Ghost, Whose Careless Handling Has Caused Trouble, Bought by a Chicago Man

New York, April 6.—Young Willie K. Vanderbilt's notorious "White Ghost" is to go to Chicago. John W. Gates has bought it from Edward R. Thomas for \$9,000, through Alexander Fisher. Mr. Thomas paid Mr. Vanderbilt \$8,000 for it last autumn. It was a German Daimler, for which Mr. Vanderbilt paid \$6,000 2 years ago. While driving it a few weeks ago Mr. Thomas ran over and killed a boy and immediately put it into Mr. Fisher's hands to sell. The "White Ghost" has a notorious record and has been the subject of many sensational newspaper stories. In it Mr. Vanderbilt established road records between Newport and Boston, Newport and New York, and New York and Philadelphia, and won several track races at Aqueduct Park, New York.

THINK HE IS WELL NAMED

"Young" Brooklyn Commissioner Causes Anxiety Among Automobilists, Who Will Protest

Brooklyn, April 6.—Richard Young, the new park commissioner, is not proving quite so friendly to automobilists as his predecessor, Mr. Brown, to whom the craft was indebted for permission to run the mile time trials on the Ocean Parkway last autumn. He has just issued an order forbidding them to the eastern driveway of Prospect Park. The L. I. A. C. has appointed a committee to protest to Mr. Young against this illegal prohibition and to remind him that the automobilists at the time of the passage of the highway law last year, which classed automobiles as vehicles and entitled to enter the parks, voluntarily resolved to keep off the eastern driveway out of courtesy to the horsemen, whose association had done them many favors; and to inform him politely but firmly that they do not recognize his right to issue any such order. If the hint be not sufficient then any attempt to enforce the new order will be legally contested.

Athletic Club's Automobile Division

New York, April 6.—The New York Athletic Club has organized an automobile division. It has already 90 enrolled members and a total motor vehicle owning membership of 180 to draw from. Today a committee of the governors is to be taken on the first club run to Travers Island, the club's summer home, where it is proposed to erect an automobile house with storage, repair and charging facilities. No city stations will be asked of the governors. The cycling division is to be undisturbed in the possession of its spacious wheel room annex on 58th street.

STAGE LINES ESTABLISHED AND PROPOSED

Extraordinary Activity Shown All Over the Country—Details of Late Organizations and Their Intentions

THE automobile as a rival to the trolley and horse-drawn stage in passenger carrying is becoming very motor vehicle extension in other lines. How great is the demand for the automobile for bus lines was shown by the demands at the Chicago Motor Vehicle Co.'s stand at the Chicago show. Sales recorded would seem to indicate how wise this concern has been in devoting so much attention to bus manufacture. The reports that have come to MOTOR AGE the past week show auto stage lines established or proposed in eleven states. Particulars in brief follow:

Michigan—Eugene D. Winney, of Detroit, represents a syndicate which proposes to run automobiles on Belle Isle. The purchase of twenty vehicles with an average seating capacity of 18 persons is contemplated.—A bus line between the Spring Lake toll bridge and Highland Park was opened last week. A Grand Rapids mercantile firm proposes to add another line over the same route. These lines will be of great value to Grand Haven people in reaching Muskegon.

Nebraska—An automobile rapid transit line is proposed between the Burlington depot at Lincoln and Bethany, a suburb four miles distant.

New Jersey—A stage line is being organized to run the coming summer between Long Branch and Asbury Park, with a capital of \$125,000 and vehicles seating twelve persons each. Among its promoters are Augustus Chandler, E. Tucker Welch, Jr., T. D. Bagley, R. C. Adamson, J. W. Flock, H. B. Slocum and H. I. Phillips.—Three omnibus automobiles carrying fifteen passengers each are to be bought by a company organizing in Cranbury. One will run between Cranbury and Trenton, thence on to New Brunswick and return, and another between Hightstown and New Brunswick. The third omnibus will be held in reserve in case of accidents.

Missouri—Gus Reising heads a movement of citizens to run a motor vehicle stage line between St. Louis and Creve Coeur over the Olive street road. Six automobiles will be purchased. Four will be run between St. Louis and Olivette and the other two to Creve Coeur.—The Crawford House in Crawfordsville has bought a bus from the Chicago Motor Vehicle Co.

Tennessee—There is talk of organizing a stock company and ordering a bus to run between Smithville and Watertown in De Kalb county.

Texas—Major J. B. Armstrong, a wealthy stockman of Austin, is agitating the question of putting in two motor stages between Alice and Brownsville, which are 100 miles apart and require two days and a night to make the trip by horse stages.

Connecticut—The automobile for the Woodbury stage line was given a trial trip last week by Messrs. Stockbine and Boyd.

California—Ten automobiles have been delivered for the stage line between San Jose and Alviso and Los Gatos and Saratoga. Another line is contemplated in the oil districts near Bakersfield, thus connecting the Southern Pacific and Santa Fe railroad systems.

South Dakota—Clark Coates proposes to establish an automobile line in place of an electric system at Sioux Falls.

Georgia—The Hotel Sainor at Macon has arranged to supplant its present horse stage by an autobus.

Oregon—A new automobile line from Portland to Gresham and Mount Hood is promised before long. A well known business man, who does not wish his name mentioned at present, said to a reporter: "If a trolley line is not built in Gresham before the 1905 fair, I will start an automobile line, to run to Gresham and Mount Hood. Last summer we did not have satisfactory means of communication with Mount Hood, and many tourists would make the trip from Portland if they only had the opportunity. I intend to buy a \$2,000 automobile, designed to carry eleven passengers and the driver. It will be an up-to-date make and my intention is to have the machine make the journey to Mount Hood and return in one day. We could leave here about 7 o'clock in the morning, have breakfast say 20 or 25 miles from the city and be home again about 8 o'clock in the evening."

PLAN ORIGINATED IN CHICAGO.

The plan to operate a line of vehicles between North Milwaukee and Cedarburg, Wis., reported in last week's issue, originated in the office of the Chicago Motor Vehicle Co. It happened that a number of business men were there on other business and during the conversation one of them suggested that a stage line would be an excellent idea. The proposition impressed them all so favorably that they retired to a private room, arranged the details of the formation of a company, and actually handed the Chicago Motor Vehicle Co. a check for their first machine before they left the place. If business is to be done in this way it might be a good idea for the Chicago people to set aside a room for the organization of companies to conduct rural stage lines!

THE PROMOTER HAS WEAKENED.

With a flourish of trumpets a gentleman from San Jose, Cal., came east to purchase a lot of steam vehicles for service in that city. He was said to be an agent at Oakland. The financier seems to have put up the money, and now the "nine beautiful steam machines, each with a seating capacity of twelve," are in a stable waiting for some one to do something. The promoter has abandoned the undertaking, and R. C. Kirkwood, who supplied the money, wants to dispose of the vehicles. An attempt is being made by C. B. Reynolds to organize a new company, and it is said that almost four-fifths of the \$16,000 required to purchase the outfit has been subscribed.

SOME OF THE LATE DEVELOPMENTS.

Detroit, Mich.—The Jefferson Automobile Livery Co., which was recently organized, is now ready for business, having headquarters at Jefferson and the boulevard.

This livery is an innovation for Detroit. The company will use the Foster machine.

SPOKANE, WASH.—An automobile is being built here to be used as a passenger and express line between Lewistown and Harlowton. The promoters are John R. Cook, a Kendall real estate and mining man, and Fred A. Brod, of Spokane. The automobile will be operated by steam and will be capable of covering the distance between this city and Harlowton in 5 hours. The passenger coach, or car, will be trailed behind the engine and will accommodate from 16 to 20 passengers. The wheels of this car will be fitted with solid rubber tires. The automobile will be complete and ready to go on the line some time between May 20 and June 1. Round trips will be made daily between Lewistown and Harlowton, and if it equals in speed the anticipations of the builder it will be possible to leave Lewistown at 11 o'clock a. m. and reach Harlowton in time to connect with the train to Lombard. The estimated rate of speed it will be able to produce is 12 miles an hour. The entire vehicle will cost the builders at the shops in Spokane \$2,000.

HILLSBORO, O.—People here are forming a company to operate automobile buses from that city to Chillicothe. The promoters are in the market for four large high-speed machines.

CHILLICOTHE, O.—It may be that an automobile service between Hillsboro and Chillicothe will soon be in order. A Hillsboro capitalist with abundant means has been figuring on the plan for some time and is endeavoring to organize a company. The proposed company will be capitalized at \$20,000, which is thought to be sufficient.

CEDARBURG, WIS.—The Cedarburg and Milwaukee Mobile Co. has been organized with a capital stock of \$10,000. D. Wittenburg, Jr., was elected president, William Roebken, vice president, and William F. Freund, treasurer. The company has ordered two vehicles. They will be ready for delivery about the first of May. The route proposed is from Cedarburg through Hamilton, over the Green Bay road through the towns of Thiensville, Brown Deer, to North Milwaukee, where the autos will connect with the Milwaukee electric line. The company has made arrangements with the electric line to sell tickets to Milwaukee.

DUBUQUE, IA.—If the plans the bridge company has under consideration mature there will be an automobile bus running across the bridge in a short time, instead of the stage in use at present. It is stated that negotiations are on with an eastern firm to supply one of the latest and most modern vehicles of this kind to carry passengers between this city and East Dubuque.

PONTIAC, MICH.—Ernest Wheeler, of Chicago, has a plan on foot to establish an automobile line between Pontiac and Orion during the summer. He proposes steam autos to carry 22 passengers, with hourly service, at 25 cents per trip.

DETROIT, MICH.—The Mt. Clemens Automobile Livery Co. has purchased three autos from W. E. Metzger to be run from the hotels to Lakeside and other points of interest around Mt. Clemens.

REDKEY, IND.—A company has been formed to run an automobile line between this town and Dunkirk, a distance of 4 miles. The company is capitalized at \$10,000. The company has decided to carry passengers, baggage and express.

MCKEESPORT, PA.—Automobile service has been established between McKeesport and Riverview Park, several miles out up the Youghiogheny river.

DUNKIRK, IND.—Articles of incorporation have been filed of the Dunkirk Mobile Transit Co., to operate a line of auto-

mobile omnibuses between Dunkirk and Redkey. Beside the transportation of passengers the company will do a general baggage and express business. The affairs will be conducted in the same manner as are those of an ordinary transfer company. The capital stock of the new enterprise is \$10,000 and the directors are J. B. Garber, E. S. Hart, John W. Webster, Jr., J. L. Slough and J. A. Stafford, Jr., all of Dunkirk.

BROOKLYN, N. Y.—It is expected that an automobile stage route will be operated on Ocean avenue, Patchogue, the coming summer.

Park Commissioners Forced to Yield

The governor of Maryland has signed a bill prohibiting the park commissioners of Baltimore from excluding automobiles from the public parks and preventing them from limiting speed to less than 6 miles an hour.

To celebrate this event the members of the Automobile Club of Maryland held a jollification at their club rooms, 872 and 874 Park avenue. To show that they do not intend to abuse the privilege granted them by the legislature, the chauffeurs have passed a resolution requesting owners of automobiles not members of the club to proceed at a moderate rate of speed through the park and exercise the greatest caution not to scare spirited horses. Copies of this resolution will be sent to all the owners of automobiles in Baltimore within the next few days, and the members of the club promise to strictly observe it.

Dangers of New Speed Law

New York, April 6.—Danger lurks in the new Cocks speed law for the automobilists of Greater New York. The limit "within any city" is 8 miles an hour. A local magistrate recently interpreted this as meaning "within city limits" and thus included the suburban roads of the city. There are hundreds of miles of them, over which under the old law automobilists have speeded up to the limit for the county or "in the unbuild-up portions of a city," as the former statute put it. If the severer interpretation be insisted upon then New Yorkers will have to look to the board of aldermen for their salvation, as the new law has a saving clause, "except when a greater speed is permitted by a city ordinance." The A. C. A. law committee is preparing a statement of the law on the subject for the use of its members. It refuses to discuss the probability of any effort being made to have a liberal ordinance passed.

Dirand's Steering Device

Louis X. Dirand, of Torrington, Conn., has taken out letters patent covering a four wheel steering gear and goes to the extent of showing two forms of it, but he is either mixed in his calculations or the draughtsman has perpetrated a huge joke on him as his device, as shown in the patent drawings, would turn all four wheels in the same direction, thus enabling him to perform a beautiful side step, but not taking him around the corner unless he be prepared to travel the new direction crab-wise.

Matters of Commercial Interest

NEW YORK TRADE NEWS

Gleaned Among the Makers of Automobiles and Those Who Buy and Sell Them

New York, April 6.—Harry H. Unwin, secretary of the National Association of Automobile Manufacturers, was seized with grip en route to New York from the Chicago show, and is now under a physician's care at his former home at New Brighton, Pa.

Sidney B. Bowman is equipping a four-story automobile station in 43d street, near Sixth avenue.

"That Friedman is going to be a winner," said Frank Eveland, of the Spalding-Bidwell Co. "There are fully fifty people here a day to look at the sample car I have. All I want now is deliveries."

L. E. Holden has opened a salesroom for automobiles and Darracqs at 523 Fifth avenue.

The first sample of the Toledo gasoline touring car is expected at the branch of the International Motor Car Co., 91 Fifth avenue, within two or three weeks. The fame it won at the Chicago show has reached New York and there are constant inquiries for it.

J. A. Newhouse and Robert Miller, former cycle racing cracks, have established an automobile station at 132 West 49th street, New York. It is known as the Empire Automobile and Storage Co.

Two enterprising young men have formed the Craven-Hamilton Co., have purchased several foreign cars with tonneau bodies, carrying from five to six persons, and are renting them by the hour, day or week, in charge of experienced chauffeurs, at prices that would stagger one not realizing the virulence of the automobile fever now raging here. Fifty dollars for a Sunday ride is a fair sample of what rentals are paid.

The Weeber Muffler

Albany, N. Y., April 7.—It is alleged by many that gasoline machines lose from 10 to 20 per cent of their power by back pressure by the use of a poor muffler. To overcome this loss of power many of the machines placed on the market this year have devices for cutting out the muffler when the full power of the engine is required. Arrangements of this character are said to be unnecessary with a new muffler just placed on the market by the C. F. Weeber Mfg. Works of this city. It consists of a cylindrical jacket, containing sets of small piping in two chambers. When the exhaust reaches the first chamber the small tubes expand and release the pressure through contracting tubes in the other chamber. A number of interesting experiments were recently made on an Oldsmobile fitted with this muffler before a MOTOR AGE representative. The Oldsmobile is distinctive for the quietness of its muffler. The machine tested made no more noise than the regular wagon and yet when the

Weeber muffler was attached and cut out the engine showed absolutely no variation or loss of power. The muffler makes a noise grateful to the ears of gas engine lovers, and that it will receive the endorsement of builders generally is evident by the interest already shown. Nearly every automobile in Albany is fitted with this muffler.

STATE BOARD OF TRADE

Active Californians Travel Many Miles to Talk About Reforms in Cycle Trade

That most active of all cycle dealers' associations, the California State Cycle Board of Trade, held a directors' meeting a week ago at which delegates from Sacramento, Stockton, San Jose, Santa Rosa, Fresno and other interior towns were present. During the 4 hour discussion several important points were discussed. The question of improved roadways, not only in San Francisco and vicinity but in all parts of the state, is being agitated by this society. Its influence will undoubtedly be felt in the near future and especially at the approaching election. Various committees reported that the difficulties existing between dealers in neighboring cities had been satisfactorily adjusted.

Mr. Schilling, of Santa Rosa, reported that a local cycle board of trade would be in operation within a month.

M. J. Kenney is president of the board, which has a large membership of prominent and influential firms and individuals.

WHITE'S BIG STEAM CARRIAGE

Cleveland Maker Appreciates Popular Demand and Prepares to Meet It—Other News

Cleveland, April 7.—The big touring car built by the White Sewing Machine Co. is one of the chief objects of curiosity these days. Like the exhibition machine heretofore built, it is enameled white in all parts. It has two parallel seats. Artillery hubs are used with wood wheels; the wheel base is very long; the boiler is about twice the size of that used in the standard carriage and it is under the rear seat. Under the front seat is the engine, which is also of large dimensions, while in the hood in front are radiating flanges similar to those used on large hydro-carbon machines. This device is unusual to steam vehicles, being designed for condensing the expanded steam, thereby saving a large amount of water, correspondingly increasing the active radius of the vehicle. The White company is making exhaustive tests with the vehicle and is not yet prepared to announce it as perfected.

H. A. Githens and other members of the traveling force of the G & J Tire Co., Indian-

apolis, have been in the city the past week making some interesting tests with the new G & J clincher tire. The new product, which is made wholly without retaining lugs, showed up surprisingly well under some very severe tests, made under adverse conditions with high speed vehicles. The tests were conducted for the benefit of local manufacturers and on various machines. They demonstrated that the tire can be ridden deflated over rough roads without injury to the tire or danger of pulling off, even when making sharp curves, and that under excessive high speed it will not heat up by reason of the peculiar and special weave of the fabric and the amount of rubber used in the friction. It is said that in a case where a G & J tire was used, one front wheel and another make on the other, the G & J was perfectly cool after a fast run, whereas the other tire could hardly be touched, it was so hot.

COLONEL POPE STILL IN HARNESS

Resigns a Chairmanship But Will Probably Stay Twenty five Years in the Cycle Trade

For the last two years Col. Albert A. Pope has been the chairman of the board of directors of the American Bicycle Co. His resignation of the position was tendered last week and it was immediately rumored that dissatisfaction with the policy of the company was responsible. This story is emphatically denied and Col. George Pope says that there is no truth in it. The resignation of the chairmanship does not mean that the colonel will cease to take an active interest in the affairs of the company, for he will still remain a member of the board. Colonel Pope is now, beyond all question, the oldest surviving cycle manufacturer and has been continuously in harness nearly a quarter of a century. Many years ago it was his ambition to stay in the business that length of time and there is every indication that his early desires will be realized.

EXPORTS OF AUTOS AND CYCLES.

Record of Goods Shipped by America to Foreign Ports During Last Week

Washington, D. C., April 2.—The exports of bicycles for the week, from the port of New York, are as follows:

Antwerp—Bicycle material, twenty-four packages, \$824.
 Amsterdam—Bicycle material, 109 packages, \$3,140.
 Aviles—Bicycles, two packages, \$222.
 Abo—Bicycles, seventy crates, \$1,751.
 Bremen—Bicycles, four packages, \$95.
 Bale—Bicycles and material, twenty-two cases, \$340.
 British East Indies—Bicycles and material, four packages, \$147.
 Brazil—Bicycles and material, two cases, \$165; velocipedes, five cases, \$109.
 British West Indies—Bicycles, 106 cases, \$2,660.
 Cuba—Tricycles, one case, \$16; bicycle material, four cases, \$260; velocipedes, two cases, \$23.
 Central America—Bicycles and material, two cases, \$56.
 Copenhagen—Bicycle material, 100 packages, \$3,458; bicycles, 180 packages, \$2,196.
 Christiania—Bicycles, six cases, \$126; bicycles and material, three cases, \$179.

Dutch Guiana—Bicycles and material, fourteen cases, \$351.

French Poss. in Africa—Bicycle material, one case, \$80.

Genoa—Bicycle material, thirteen packages, \$897.

Glasgow—Bicycles, thirty packages, \$930; bicycle material, one package, \$50.

Hamburg—Bicycles, 209 cases, \$5,108.

Havre—Bicycles, 240 packages, \$11,229; bicycle material, thirty-six packages, \$3,342.

Liverpool—Bicycle material, two packages, \$40; bicycles, thirteen packages, \$350.

London—Bicycles, 115 cases, \$4,251; bicycle material, 192 cases, \$10,760.

Liege—Bicycle material, twenty packages, \$900.

Mexico—Bicycles, three cases, \$169.

Rotterdam—Bicycle material, fifteen cases, \$689; bicycles, 151 packages, \$3,770.

Stockholm—Bicycle material, two cases, \$100.

Stavanger—Bicycle material, seventeen packages, \$1,025.

Southampton—Bicycle material, 103 packages, \$3,969.

St. Petersburg—Bicycle material, four packages, \$198.

Turin—Bicycles, fifty-five crates, \$825.

Uruguay—Bicycles, two packages, \$1,050.

U. S. Colombia—Bicycles and parts, four packages, \$175.

The figures showing the exports of automobiles for the week ended from the port of New York, are as follows:

London—Motor vehicles and parts, twenty-three cases, \$10,170.

Southampton—Motor vehicles, five cases, \$5,000.

Venezuela—Motor vehicles, one case, \$152.

AMERICAN BICYCLE COMPANY SECURITIES

Remarkable Rise in Value of Common Stock—Wall Street Journal's Summary

Attention was called, last week, to the fact that there had been a remarkable rise in the value of American Bicycle Company securities. During the latter part of the week this continued until, last Friday, the common stock, which, a week before, stood at \$2 touched \$6. Since that time it has been between 5½ and 5¾.

Commenting on the company's shares the Wall Street Journal prints the following:

Some investors are closely watching the bonds and preferred shares of the American Bicycle Co. A few industrial concerns in this country must finally emerge as successful manufacturing investments. It is certain that the American Bicycle Co., which for 3 years past has made a profit of less than \$2 per bicycle and is selling over 700,000 bicycles per annum, has driven practically all competition out of the field. Nevertheless, with these small profits it is earning more than twice the interest upon its bonds and its gross and net business is steadily increasing.

There are less than \$10,000,000 5 per cent bonds outstanding, although these have sold recently at under 60 per cent. The net earnings of the company are understood to be about \$1,200,000 per annum. A handsome dividend on the preferred stock, which is selling at under \$20 per share, is being earned, as is demonstrated not only by the gain in gross and net business, but by the increased cash resources and decreased liabilities of the company.

No dividends upon the shares are probable for a con-

siderable time, as the company proposes to enter the motor carriage business and will need all its resources for that department. The officers of the company believe they are on the eve of great success in this department, but should the motor carriage business be a failure and the company charge off all its investment therein, the earnings and security for bonds of the company are declared to be ample.

The American bicycle shares may or may not be cheap at the present time, but they should be carefully studied and watched in the future by investors.

CENTAUR MOTOR VEHICLE COMPANY

Two Old Members of the Cycle Trade Will Make Electric and Gasoline Carriages

A splendid combination of personalities is that recently formed at Buffalo for the conduct of the newly incorporated Centaur Motor Vehicle Co. The prime movers in the enterprise are J. B. Eccleston, who, as manager of the factory and, indeed, the entire cycle department of the Wm. Hengerer Co., is regarded as one of the most successful of the younger men in the industry, and H. C. Wilcox, who, as secretary of the



The Centaur Electric.

American Wood Rim Co., which practically controls the wood rim industry, has become known from ocean to ocean.

The stock of the new company is \$100,000. Its factory is at 642 Linwood avenue, Buffalo, and there it will manufacture electric and gasoline vehicles, both for business and pleasure. The electric machine embodies the development of months of study by electrical engineers of undoubted ability. While they have found the National battery successful they are not committed to any one on this point and expect to supply any reliable battery the purchaser may desire. The machine has four speeds, forward and reverse, ranging from 4 to 15 miles an hour, and the batteries referred to will

run 60 miles, on good pavements, on one charge. In the general appointment of the carriages the makers expect to supply material and workmanship of the highest quality, the equipment including all the modern appurtenances, such as ammeters, electric bulbs to furnish lights to all parts, charging plug and cable and hoods.

The company is not prepared at the moment to give details of the construction of the gasoline machine. They are well under way, however, and the line will include 5 and 6-horsepower runabouts and light touring wagons. The company expects to sell to agents as well as direct for the present.

PACIFIC COAST NOTES

Agent Returns From Chicago and Describes the Intellectual Feast—Toledo Agency Located.

SAN FRANCISCO, CAL., March 29.—After a visit to the factory Manager Hopkins, of the White agency for the coast, has returned from his trip east to see the first week of the month sights at the Chicago automobile show, which he speaks of, by the way, as the cheapest of all educational feasts in this line, impressing him, however, more favorably than ever that the White is monarch of horseless vehicles.

At the International Motor Car Co.'s San Francisco branch it was given out yesterday that the object of this establishment has successfully accomplished the object sought when it was located here a few months since—to locate coast agencies—and that the branch will be closed about April 1st.

EQUIPMENT REQUIRED

British Officer in South Africa Looks to America for Suitable Automobiles.

NEW YORK, March 31.—S. M. Butler, secretary of the Automobile Club of America, received a letter today from Capt. R. S. Walker, of the Royal Engineers, Search Light Division, Pietersburg Road, Pretoria, South Africa, saying it was his idea to ask the commander in chief to approve of a more general use of motor cars and bicycles in the present campaign and he desired to be ready with the necessary specifications and prices. He believed American road conditions more closely resembled South African than those of England, and from what he knew of American machines they came near to his idea of what he wanted. He accordingly enclosed a copy of a letter he had sent to a dozen or more American makers and asked that he circulate it among some more of them, who would be likely to be able to furnish what he desired. The letter was as follows:

I may be requiring several automobiles, light motors, and motor bicycles, for work in the field, and should be obliged if you could quote me c. i. f. Cape Town or Southampton, stating also what stock you hold, and how soon you can manufacture and deliver from stock.

As far as experiments go, the following are my probable requirements:

Automobiles; steam, 6 to 7 horsepower and 8 horsepower; gasoline, 8 to 10 horsepower and 12 to 15 horsepower, water

STEEL RIMS

CRESCENT AND
DROP CENTER

SECTION

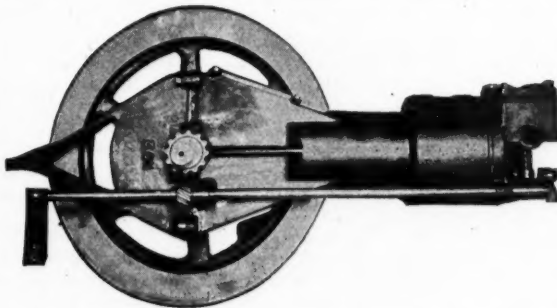
From $1\frac{1}{4}$
inches up
to 4 inches

DIAMETER

From 28
inches up
to 5 feet

THE AUTOMOBILE AND CYCLE PARTS CO.
SMITH STAMPINGS FACTORY
MILWAUKEE, WIS.

Our No. 2 RUNABOUT Engine



Cylinder $4\frac{1}{2} \times 6$. Rated 4 h. p.
at 600 r. p. m. With

Two-Speed Forward
and Reverse
Transmission Gear
(Spur Gear)

With or without accessories. De-
scription appeared in March 20th
issue of MOTOR AGE. Write for
prices in lots of 1 to 100 or more.
Prices are right and will allow you
to make money.

THE P. J. DASEY CO.

19-21 La Salle St., - - - CHICAGO, ILL., U. S. A.

cooled, to carry 2 and 4 men; on trailer, 450 to 700 lbs.; wire wheels, pneumatic tires very stout, geared for a maximum speed of 15 to 20 miles per hour, lightness essential, seat accommodation as simple as possible, in fact, the bare frame will do, as I should probably have to alter my seats; plenty of spare parts, including tires and engine parts.

Motors; steam or gasoline, of same type as used in cars, for fixing on a horse drawn vehicle, capable of going over very rough country, with carbureters, tank, etc., complete. Also water cooled gasoline motors from 2 to 5 horsepower, with all accessories, capable of being carried singly or in pairs on pack saddles.

Motor Bicycles; for rough work, low geared; the motor should be protected as far as possible from dirt and high up for crossing rivers. I should require sketches or drawings, and descriptions, to enable me to judge of their utility for work out here. The gear will be primarily used for running search lights in the field, but it might be put to other uses, so that it will be given a thorough military test. It will therefore not be worth your while to quote for rubbish.

In case I should be proceeding to England to buy plant, you might send a second copy or reference to agent in England, care Messrs. Cox & Co., Charing Cross, London.

CONFIDENCE WITHOUT PROFIT

Canadian Holders of Cycle Shares Yield and Say They Believe in the Directors

The directors of the Canada Cycle & Motor Co., who, as was reported last week, have been sued by the holders of common stock and charged with all sorts of evil things, doubtless feel, about this time, that they are under very deep obligations to J. W. Flavelle, one of their number, who seems to have convinced the preferred shareholders of their error to the extent of having them adopt unanimously a vote of confidence. This came about at a meeting for explanatory purposes, and while Mr. Flavelle admitted errors of judgment, he convinced his hearers that the directors and promoters had acted honestly. The directors were not present, the speaker explaining that, the matter having been taken into court, they would have to answer there.

Taking up the history of the company, Mr. Flavelle said that Messrs. Cox, Jones, Massey, Soper and Ryckman had purchased the properties which afterward came into the possession of the company, paying for them as follows: H. A. Lozier & Co., \$480,000; Goold Bicycle Co., \$257,500; Welland Vale Co., \$275,000; Massey-Harris Co., \$300,000; Gendron Co., \$85,000.

The underwriting expenses had been a quarter of a million dollars and other amounts had reached \$20,800, so that after they had sold the properties to the present company there remained a balance of only \$72,100, out of which had been paid fees of lawyers, accountants and valuers.

The reason for the payment of a dividend of \$175,000 last year which was not earned was referred to by Mr. Flavelle, and the difference between the bookkeeping methods in the bicycle and other businesses was partly accountable for this. The late Mr. Massey had incorporated into the company a set of accounts similar to those of the business with which he was connected, and thus he fell into an error.

The dividend was paid after a statement of the president that the sum of \$150,000 was assured as a result of the season's business. He had based his judgment on the cost of material and manufacture and the selling price, which in his business he was able to gauge accurately. The principle, however, did not work out in relation to the bicycle business. The wheels cost \$3 more to make, \$3 more to sell, and realized \$3 less on the sale than had been estimated, \$9 on 24,000 wheels, or \$216,000.

The members of the board and their friends, said Mr. Flavelle, hold \$1,300,000 of the \$2,500,000 stock.

At the conclusion of a lot of questioning the following resolution was adopted unanimously:

"That the meeting having heard the explanations of the chairman and the president with entire satisfaction, are of the opinion that whatever mistakes of judgment may have been made, there has been, in our opinion, entire good faith in the action of the directors in the inception and management of the company, and that it is desirable in the interest of the shareholders, and a matter of justice to the directors, to give them our heartiest support and confidence in the future."

INCORPORATIONS AND ENTERPRISES

People Preparing to Participate in the Profits of Automobile Making and Operation

PORTLAND, ME.—Spencer Auto-Vehicle Co., organized at Portland, for the purpose of manufacturing automobiles with \$500,000 capital stock, of which \$500 is paid in. The officers are: President, Seth L. Larrabee, of Portland; treasurer, W. F. Rogers, of New York.

PORTLAND, ME.—Waltham Autocar Co., organized at Portland for the purpose of manufacturing carriages operated by power with \$150,000 capital stock, of which \$125 is paid in. The officers are: President, Seth L. Larrabee, of Portland; treasurer, Matthew B. King, of Waltham, Mass.

MICHIGAN CITY, IND.—Teale Cylé Co. is making arrangements to build gasoline engines.

INDIANAPOLIS, IND.—The Ewart Mfg. Co., which makes bicycle chains and other kinds of similar chains, will build a \$50,000 three-story brick building on the site of its present factory, on Holmes avenue, near Michigan street, Haughville. It will be used for manufacturing and storing chains.

MILWAUKEE, WIS.—The Cutler-Hammer Co., manufacturer of electric motor controlling devices, has purchased an entire block on St. Paul avenue between Twelfth and Thirteenth streets, from F. A. W. Kleckhefer, upon which it will erect many large factory buildings this spring.

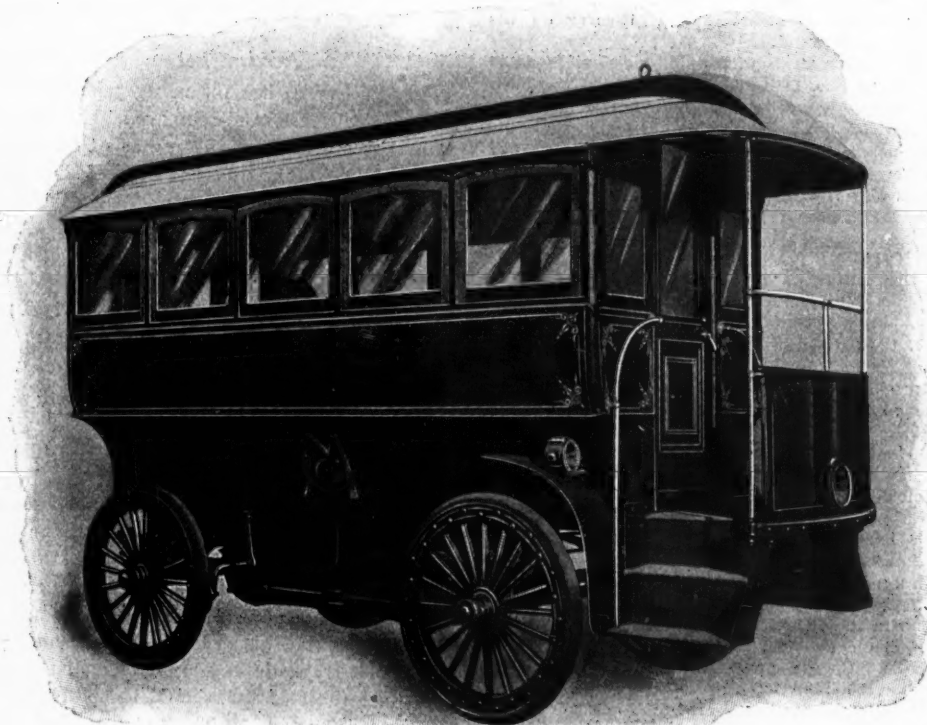
WEST PARIS, ME.—The wood rim plant has been purchased by the South Paris Mfg. Co. and will be put into immediate operation. From 100 to 150 men will be employed. There are two camps in Greenwood where about 100 men are employed in cutting lumber for this business.

YOUNGSTOWN, O.—J. A. Swinehart of Akron, inventor and patentee of the Firestone side-wire rubber vehicle tire, is installing a plant for applying the tires at the factory of Kuhns Bros., who will be local agents.

PATERSON, N. J.—The Motor Mobile Co., 257 Market street, filed a certificate of decrease of capital stock from \$200,000 to \$10,000.

BUFFALO, N. Y.—The certificate of incorporation of the Buffalo Automobile Station Co. has been filed with the County Clerk this morning. The capital stock is \$1,000 and the directors for the first year are William Hamlin, Frank A. Babcock, Frank A. Babcock, jr., and Charles Wesley of Buffalo, and Jacob Amos of Baldwinsville, N. Y.

The Greatest Money - Maker In The World!



THE CHICAGO AUTO-COACH.

Two sizes, carrying sixteen and twenty-two passengers. Abundantly powerful, strongly built, elegantly finished and upholstered, speedy, quiet and comfortable; heated by our patent hot water system. We also make all sizes and styles of Stan-hopes, Coupes, Traps, Surreys, Brakes, Delivery Wagons, Freight Wagons, Hotel Busses and Coaches.

—WRITE FOR CATALOGUE—

Chicago Motor Vehicle Company
326 Wabash Ave., Chicago, Ill.

Manufacturers of Unequalled HYDROCARBON Motor Vehicles.

COLUMBUS, O.—The Standard Automobile Co. of this city was incorporated with \$5,000 capital stock by T. P. Corboy, Charles McCarthy, W. V. Moler, Katherine Corboy and Margaret Corboy. The company will manufacture automobiles and supplies.

CYCLE DEALERS ACTIVE

The Retailers are Improving Conditions for a Season of Good Business

WELLESLEY, MASS.—Jesse Tourtellotte and George Kemp, of North Brookfield, have moved to Wellesley, where they will open a bicycle shop.

MARBLEHEAD, MASS.—Edward J. Boyle has hired the Laskey building on School street, and will carry on his bicycle business at this stand.

OSHKOSH, WIS.—Hoaglin & Chase, bicycle dealers, have dissolved partnership. D. O. Chase will continue the business. The firm began doing business here in 1893.

BOWLING GREEN, KY.—W. B. Atkinson & Son is the style of a new firm opening up in the Redford building. They will conduct a bicycle shop.

HERKIMER, N. Y.—J. C. Keefe is building an addition to his store on North Main street to be used as a bicycle repair shop.

PLEASANTON, CAL.—G. W. Detjen has opened a bicycle store in the Wise building, in partnership with Fred McDougal.

SALINA, KAN.—F. W. Miner has sold his bicycle and repair shop to O. C. Richardson, who will continue the business.

DETROIT, MICH.—J. P. Schneider, dealer in autos and cycles, has opened his new store at 189 and 191 Jefferson avenue, and this will be a permanent location, as well as the old stand at 604 and 606 Michigan avenue. In the bicycle department Schneider will handle, among others, the National, Wolf-American and Monarch.

CASS CITY, MICH.—Berkeley E. Patterson, who was in the bicycle business here with J. D. Schenck for 2 years and 2 years with the American Cycle Co., of Saginaw, has purchased a half interest in the Blake Gillies cycle store.

NORWICH, N. Y.—C. H. Knepek has arranged to open a cycle repair shop in the Baker block.

DAYTON, O.—The cycle dealers kept open house on the evening of the 3d. Special programmes were provided by Forrer & Schaeffer, 10 East Second street; G. W. Shroyer & Co.; William Hall, 14 West Second street; Stark & Weckerson, 39 South Main street, and Niehaus & Dohse.

MADISON, WIS.—Harry Hull is about to move from his Pinckney street store to the vacant store in the Marston block, 12 West Main street. As an evidence of the revival Park & Sons say that last season at this time they had sold but two wheels, while their books show over twenty sold for this season.

Hunt Company to Be Dissolved

The Hunt Mfg. Co., of Westboro, Mass., which formerly manufactured bicycle saddles, has filed a petition for dissolution, having ceased to do business. The company was incorporated April 10, 1893, with a capital stock of \$30,000, for the purpose of manufacturing and selling bicycles. The petition for dissolution is signed by J. A. Hunt, G. M. Tewksbury and C. B. Tewksbury, of Westboro; A. L. Garfield, F. N. Smith, G. H. Ely, J. C. Hull, C. A. Baker, admr., W. A. Ely and Ella H. Rockwood, all of Elyria, Ohio, stockholders.

Electrics Need No License in Washington

The Washington (D. C.) Electric Vehicle Co. was, some months ago, fined in a police court for failure to take out a license for its electric cabs. It carried the

case to the court of appeals, which has decided that the license law in respect to hacks, cabs, buses and other vehicles for the transportation of passengers does not apply to electric carriages. The court of appeals points out that electric vehicles were unknown at the time of the passage of the act, and were not within the contemplation of the authors thereof; that it was not intended to embrace every conceivable vehicle that might thereafter be invented and brought into use, and that it is not pretended that every vehicle that is run upon the streets for the carriage of passengers is subject to a license tax under the provisions of the act.

Three Acres, a Lot and a New Building

Mr. Lott, who has for many years been a successful bicycle dealer, at Anderson, Ind., has been seeking for some time to interest the people of Streeter, Ill., in an automobile factory and has succeeded. The agreement is to the effect that the citizens furnish \$10,000 for the purpose of erecting a building 36x250 feet long and two stories high, and 3 acres of land on which to erect this and other buildings. The money subscribed will be paid as the building progresses, but the last 25 per cent will be retained until the machinery is in place and in operation. The company deposits a cash bond of \$2,000 that it will carry out its part of the contract.

Line of the Globe Cycle Company

D. H. Lewis, general manager of the Globe Cycle Co., of Buffalo, says that over 1,200 machines of his company's make were sold in that city alone last year and he believes that 2,000 will be reached this season. The company's main saleroom is at 110 Broadway, and it has twenty-four agencies. Four models of full-size wheels are included in this season's assortment. First comes the Globe Hygienic cushion frame, listed at \$50, then the Globe racer at \$45, the Globe special at \$30 and the Globe roadster at \$25. The company also carries a large line of machines with frames ranging from 14 to 20 inches.

Another Bottom-Bracket Suit

Cleveland, O., April 7.—The American Bicycle Co. has commenced suit against the Toledo Metal Wheel Co. for alleged infringement of the old Smith bottom bracket patent. An injunction and accounting are asked for.

The Clark Tire Co., of Chicago, makers of Clark detachable automobile tires, has appointed Brandenburg Bros. & Alliger, of 93 Lake street, Chicago, Ill., and 56 Reed street, New York, general sales agents for its tires in the United States. R. H. Croninger, of the Clark Tire Co., is now in the east getting out the Clark tires in all sizes for all weights of vehicles, and these the company will be ready to furnish in the near future. These gentlemen are more than pleased with the reception the tire received at the Chicago show, and their business on 28x2½-inch tires has been beyond their expectations.

THE
MORROW

There are 3 Classes
....of Coaster Brakes



3

THOSE WITHOUT A PAST
THOSE WITHOUT A FUTURE
—AND—

THE MORROW

Which Has Both a Past and a Future

The past stands for the experience that places it outside the realm of doubt or experiment—for that “test of time” without which no coaster brake or anything else is complete and deserving of the patronage of the public. If its past had been doubtful it could not be of the present and perforce could have no future.

—IT IS—
THE MORROW’S PROUD PAST

that gave it a prouder present and secure future. It is not a creation of luck or language. It has a record that rarely fails to make it the choice of the man who thinks and that makes it the undoubted leader that it is. :: :: :: ::

ECLIPSE MANUFACTURING COMPANY
ELMIRA, N. Y.

THE
MORROW

WITH CORRESPONDENTS

Philadelphia, Pa., April 5.—Editor MOTOR AGE:—Can you give me the following information: I want to buy an electric pleasure vehicle, similar to the Baker. I prefer chain drive and the machine must be light and the price reasonable.—Yours, etc., C. Harrington, 10 N. 13th street.

The only machines of which we have knowledge, driven as required, are the Baker and the new machine just produced by the Centaur Motor Vehicle Co., of Buffalo, illustrated in this paper. Other reliable vehicles, without the chain drive, are the Waverley, of the Indianapolis Motor Car Co., at Indianapolis; the Columbia, by the Electric Vehicle Co., Hartford, and the National, by the National Vehicle Co., of Indianapolis.

Timing the Ignition

Aurora, Ill., April 5.—Editor MOTOR AGE:—I am more or less familiar with a gas engine, but do not understand what is done when the spark is advanced or retarded. Of course the words themselves convey some meaning, but I would be pleased to learn, through your columns, what is done to make the sparks come more or less often. It seems to be that the motor would back fire instead of increase the speed when the spark comes earlier. Would like also to know if I am correct in saying that the spark should come an instant before the compression stroke is completed.

Can you inform me if the Hampden motor bicycle is yet manufactured and where?—Yours, etc., A. C. Hall.

"Advancing the spark" means so regulating the spark as to start combustion at or before the highest point of compression is reached. Retarding refers to so timing the ignition that the explosion takes place after the compression has reached its highest point and has begun to reduce as the piston starts on the out stroke.

These results are brought about by a cam, mounted on the cam shaft, coming in contact with a primary terminal at a given point in each revolution and forcing the terminal against another, thus forming the circuit through the primary winding of the coil. When the cam passes from contact with the terminal and the circuit is broken, the spark takes place between the points in the plug. As in nearly all instances the terminals of the primary circuit are carried on a movable piece of fiber, mounted around the cam shaft, and can be moved in a circle around that shaft, it is easily seen that by moving the mechanism in one direction the terminals would be brought in contact earlier, and if in the opposite direction, later, thus determining the time of ignition.

In starting a motor the spark is set "late," that is,

retarded so that there will be no danger of back firing. As the speed of the motor increases and the momentum of the flywheel becomes sufficient to carry it over against a premature explosion, the spark is set so far ahead that the explosion takes place before the highest point of compression is reached, thereby generating greater power and causing the speed to be increased to the greatest extent. While the motor is running at high speed the spark can safely be timed ahead, but if the same thing should be done when the motor was being started backfiring would occur. The words do not refer to the spark's occurrence with more or less frequency, but are intended to refer to the position on the stroke at which the ignition is to take place.

To get the best results after the motor has obtained momentum the spark should take place just ahead of complete compression, but how far depends entirely on the kind of motor, the speed at which it is traveling and on the weight of flywheel. Experience is the only teacher in a matter of this kind. We are unable to state whether the Hampden motor bicycle is still manufactured.

No Such Thing as a Best

Melrose, Mass., March 24.—Editor MOTOR AGE:—I am looking for an automobile for my own use and write to ask your advice as to the most successful kind. Not the name, but the kind—whether electric, gasoline or steam. I have a gasoline machine of my own construction which is not a great success. I have a friend near me who has had three steam carriages of different kinds, none of which are very successful.—Yours, etc., Lewis A. Dow.

If a carriage is desired for boulevard use, suitable for women and which necessitates little or no getting ready, an electric vehicle offers many advantages not found in others. If one does not mind a little engineering and grease, a steam vehicle will carry him any distance if handled with care, and is not expensive to purchase. For all around work and economy of operation and the type that necessitates the least engineering knowledge, the gasoline vehicle is the most satisfactory. There are users of each type who claim that the machine they use cannot be excelled at present. We recommend perusal of an article by Ward Leonard, issue of MOTOR AGE of March 13, page 24.

Two Replies to Mr. Shlandeman

Grand Rapids, Mich., April 4.—Editor MOTOR AGE:—I note in your issue of the 3d the request of Frank Shlandeman for "light," and for the benefit of him and such of your other readers as may be interested I will say one remedy would be to not use so much solution in the jars as to slop over regardless of where the tops of the plates are. Of course, the makers suggest that the plates be at all times covered with electrolyte, and they are, in an automobile battery, even if the level of the liquid be not quite to the plate tops. The best remedy of all would be the one the gentleman seems to dread,

that of overhauling the whole battery, because when plates expand as badly as he indicates his have done, they have been subjected to some severe abuse or else are not adapted to the work they are doing. Then again he might take out the plates if he can get them out and clip a little off their bottoms, but I should strongly advise that he ship them back to their maker. Fooling with the paraffine, sal soda and one thing and another are all makeshifts and will result ultimately in failure and disappointment.

Regarding the lamp matter, theoretically using a lamp on one tray would have a tendency to take more current from that tray than the others, but in practice this is not noticed, as every month or so the batteries are given an overcharge to keep them in a healthy and uniform condition, so this in itself has a tendency of overcoming the unequal discharging. Besides, if he tries to use a lamp across the whole number of trays in series, when he throws them in multiple he will have a dim light which will not brighten until the last point is reached. Such an arrangement is undesirable for obvious reasons.

If Mr. Shlandeman, or any of your other readers, desire further information or suggestions, they may write me. I will help them all I can, and take pleasure in doing so.—Yours, etc., F. Jos. Lamb, E. E.

Chicago, April 7.—Editor MOTOR AGE.—In answer to Mr. Shlandeman's letter with regard to batteries, the best way to seal the top of the cells is to first remove the acid solution and then fill the cells with warm water, hot enough to be uncomfortable to the hand. Have a mixture already melted on hand, of equal parts of resin and paraffine, which should be melted separately and then thoroughly mixed by reheating and carefully stirring. For the combination vent and filling tubes use hard rubber tubing about $\frac{3}{4}$ of an inch outside diameter. These should be long enough to project about $\frac{3}{4}$ of an inch above the top of the cells. The water should reach to within $\frac{1}{8}$ of an inch of the top of the cells when ready for receiving the sealing compound, and not higher, as the compound will have a tendency to displace some of the water on account of its weight. If the sealing compound is poured upon the acid solution it will not adhere to the inside edges of the cells. Further, if cold water is used the sealing compound will congeal before distributing itself evenly over the surface of the liquid. The cells should be allowed to stand over night to allow the compound to thoroughly set, and should on no account be handled in the meantime. A nice way to make the cells liquid tight is to put soft rubber nipples, such as used for infants' nursing bottles, on over the top of each hard rubber filling tube. As they have a minute hole in their tops, this will allow the gases to escape when the battery is in action. This scheme is in use by several makers of storage batteries, and effectually prevents any slopping over of the liquid.

For coating the battery trays, the following is recommended:

Take commercial asphaltum, which can be obtained

from any large paint house in quart cans; dilute it with its own bulk of benzine and thoroughly mix. Dissolve shellac in wood alcohol in the proportion of 4 ounces of shellac to a quart of alcohol. Then mix the two solutions thoroughly. It will take some time and quite a little stirring to accomplish this, but when done the means will justify the end.

It will take 2 or 3 days for this mixture to get hard after applying, and the best way, if possible, is to set the trays out doors exposed to the air. Heat will not dry it, but only render it sticky. When thoroughly dry and hard, it is absolutely acid proof. In fact, it has been used successfully as a lining for wooden storage battery cells, where used as accumulators in connection with power and light plants.

As to the lamp proposition, it would be necessary to know the arrangement of the controller with regard to the grouping of the cells. If there are three speeds, the battery sets would have to be arranged, first, all four in parallel; second, two pairs in parallel series, and third, all four in series. If this is the case, nothing but a 20-volt lamp could be used. If only two speeds, then two 40-volt lamps could be used as stated.—Yours, etc., E. E.

Duryea on Two-Cycle Motors

Reading, Pa., April 7.—Editor MOTOR AGE: In your issue of the 3d, page 27, is an item to the effect that a two-cycle automobile motor has been made and again failed, this time by Buffalo people. The writer has built several two-cycle motors in a small way since taking up this business in 1891 and has each time abandoned them because of lack of flexibility, so that our experience in this respect agrees with your understanding in the matter. Two-cycle motors, however, are largely used for boat use, and a number of people claim to get great flexibility out of them; while the Elmore, for example, is using a two-cycle motor for automobile work. The writer had a talk with Mr. Roberts at the Chicago show and was assured that the Elmore motor gives good flexibility. It would seem that this subject should be investigated further, and I, for one, would be pleased to see some editorials appear in your columns on the subject.—Yours, etc., CHARLES E. DURYEA.

Answers to Correspondents

Charles Stratman, Washington, Pa.—The Overman Automobile Co., 7 East 42d street, New York, makes a gradometer. See advertisement.

Dr. R. A. Harris, Redlands, Cal.—We know of no work which quite fills the bill. Apply to N. W. Henley & Co., 132 Nassau street, New York, for their list.

Donald Menzie, an engineer at Cape Town, South Africa, has produced an automobile which, it is claimed, has been adopted by the British government for use on the railroad and which has a carrying capacity of six persons. When rails are not available the machine may be changed so as to become serviceable on ordinary roads.

GOOD ROADS OR CYCLE PATHS?

Reason for the Cyclists' Apathy on the Road Question—No Chance During this Life—Paths Quickly Made

Charles T. Raymond, chairman of the Niagara County (N. Y.) Sidepath Board, has prepared an interesting statement of the results of the sidepath and good roads movements during the last few years.

The report of State Organizer Bond, of October, 1901, he says, states that during the 4 years to that date 45 miles of good roads had been built at a cost of \$367,000, that 122 more miles were under contract at a cost of \$773,730, and that petitions had been filed for 1,040 miles of road, from 35 counties. Each road is built in the order in which it is approved by the state engineer.

SLOW PROGRESS IS DISCOURAGING.

It is evident from this report that the state is not building 100 miles of road per year. But suppose the appropriation was increased sufficiently to build 100 miles each year, and that Niagara county should now put in some petitions, it would be 10 years at that rate before our first petition would be reached, and if all the counties were to petition for all their roads it would be a good many centuries before they would all be built.

GOOD NEXT TIME ON EARTH.

Good roads advocates have discovered that progress under the present system is altogether too slow, and the state engineer has made the proposition that the state bond itself for \$28,000,000 and build a series of roads connecting all the county seats in the state. Even if this proposition was submitted to the people and adopted it would take some years to execute the work, and what would we have at the end? Niagara county would have a road running to Albion, another to Batavia and another to Buffalo, and that is all. These roads would be useful to wheelmen, but we should have no road to Olcott, none to Wilson or Youngstown, nor to Lewiston or Niagara Falls, not to mention Lakeside and many other places which we all desire to wheel to.

It must be remembered that an expenditure of \$28,000,000 by the state means an expenditure of \$28,000,000 by the counties also, for the state only pays 50 per cent of the cost. Thus you see that after years of struggle and an expenditure of \$56,000,000 the wheelmen of this county will have only a few good roads and those roads not leading to the points they most want to visit.

TWO THOUSAND MILES OF PATHS.

In contrast to the above, the sidepath boards throughout the state, with no help from state or counties, have during the 4 years that the state was building 45 miles of good roads, built nearly 2,000 miles of sidepaths, at a cost of about half a million dollars, raised almost entirely by a small tax of 50 cents a year on each wheel. These paths in almost every instance have been built along routes most desired by the wheelmen. In Monroe county last year over 40 miles of new path were built and 160 miles of old path were repaired, while

Suffolk county shows up even better, and in all the counties over 300 miles were built.

A good road costing \$10,000 per mile will not be as elastic or enjoyable to ride on as our East and West avenue paths, nor as clean and free from dust and mud.

CYCLISTS SHIRK SHARE OF EXPENSE.

Only a small percentage of the wheelmen of the state have purchased emblems and contributed toward the construction of paths. In our county there are undoubtedly 10,000 wheels, and yet only about 3,200 bought emblems last year. In Erie county there are 60,000 wheels. Not 2,000 emblems were sold. My object in writing this letter is to urge every wheelman to buy an emblem and help the good cause along.

If every wheelman will buy an emblem, we can cover the entire state in a few years. We can cover every road in the state with sidepaths in less time than it will take to build one good road in each county.

The emblems are now on sale at all bicycle stores and many other points. Wheelmen using the paths after April 1 without emblems will be arrested and fined, and the paths will be more efficiently and thoroughly patrolled this year than ever before. The minimum fine is \$5. It is cheaper to buy an emblem for 50 cents.

FOR THE AMERICAN BRASSARD

French System of Prizes to be Tried Here—First Race at Boston

Boston will have one of the earliest and yet one of the best of the big races of the season. It will occur on April 19 and will be one hour, motor paced.

The fact that the winner will also receive the championship "brassard" has induced many of the racing men to get into condition for the contest. The "brassard" is a piece of ribbon, but it means \$4 for each day that the holder retains it. The holder of the "brassard" must, of course, be ready to defend the championship honors against all comers, but the man who wins will have more than a month's enjoyment of the salary, when he will have to ride against either Harry Elkes or Will Stinson, or perhaps both.

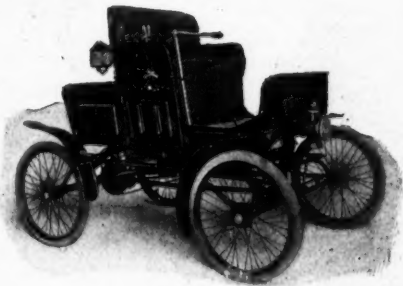
The men entered are Simar, the French rider; Otto Maya, Nat Butler, George Leander, Albert Champion, Floyd McFarland and Charles McConnell. Several of them have been in active training at Charles River Park for several weeks. Leander has been riding in competitions at Atlanta, Champion is at Washington and McFarland has been at the Hot Springs. Johnny Hall, the English crack, will probably compete, and Walthour is among the possible entrants.

STEELED THEIR HEARTS

Cycle Officials Refuse to Forgive Eaton—Promoting Association Suspended

New York, April 7.—At its meeting to-day, adjourned from the annual meeting, the National Cycling Association declined to substitute a fine and reinstate Jay Eaton before the termination of his amended suspen-

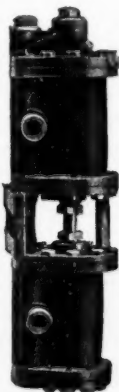
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CORRECT MECHANICAL PRINCIPLES.**

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Capacity of Air Pump, 80 lbs. pressure on tanks or tires.

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PRICE, \$30.00 EACH.

These pumps have been adopted by the Locomobile Co., the Mobile Co., and other leading manufacturers of steam carriages.

The Victor Grade - Meter



The grade is shown by the location of a bronze ball running in a graduated concave tube filled with spirits.

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Drip cup unnecessary in starting—Aluminum case over generator—All connections on the outside—Strongly made—Easily adjusted—No flaring or flashing in lighting, even in strong wind. A quick and powerful generator—Main fire valve controlled at seat—Small and neat in appearance and adapted for any machine.

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ON ONE CHARGE
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sion to August 1. His offense had been too great against the fair name of cycling to admit of any further leniency than had been already shown him by the board of appeals.

The Boston six-day fiasco was disposed of finally with equal firmness. The Atlantic Cycle Racing Association, which promoted the meet and still owes the prize money to the riders, was suspended as regards each stockholder until he shall have paid his proportionate share of the money due the riders. This will compel Alexander A. McLean, who owned 50 per cent of the stock, to sever his connection with Revere Beach track as stockholder and manager until his share be paid.

The N. C. A. was changed from a stock corporation to an association. The Pacific slope and the Rocky Mountain districts will now be in charge of representatives of the western district of the Board of Control. Transfers of franchises will have to be submitted to the Board of Control for approval with privilege of purchase at the price bid within five days. The matter of proxy votes was laid on the table until the next annual meeting.

SPEED MERCHANTS OF TWIN CITIES

Two Thirty, Unpaced, Will Be Necessary to Secure Membership Among These Scorchers

The wheelmen of Minneapolis and St. Paul are organizing the Twin City 2:30 Limited Club, membership in which is to be confined to riders who are able to cover a mile on the track, unpaced, in 2:30 or better. Paul Gyllstrom presided over the first meeting and Tom L. Bird officiated as secretary.

Before a permanent organization is effected several trials will be made, and until this work has been done the affairs of the club are in the hands of C. R. Welden and Harold Melby, of Minneapolis, and T. L. Bird, of St. Paul. Members will be known as speedy men by the possession of club buttons.

Candidates for membership are Victor Peterson, W. L. McMullen, Harold Melby, H. C. Gurnee, A. A. Hansen, Andrew Westerdahl, Frank J. Burtseher, C. Olisky, C. J. Johnson, H. Van Pool, A. N. Anderson, C. R. Welden, Yoy M. Bly, Ben Erickson, Walter Granquist, Theo. Clements, Tony Johnson, Minneapolis; Tom L. Bird, B. Bird, James McIlrath, F. A. Mills, Charles Hofer, J. J. Schwartz, F. E. Hipkins, A. C. Mertens, John Korlath, St. Paul.

MILE-A-MINUTE MURPHY

Has a Steam Tandem and Will Carry Brother Bill at Something Like a Hundred Miles an Hour

New York, April 6.—The Murphy brothers, veteran cycle racers, have built a double-boilered, double-cylindered steam tandem, on which they think they will put all world's records to the bad in the A. C. A. mile straightaway time trials on May 31. Charles Murphy rode a bicycle behind a Long Island railroad engine a mile in 57 4-5 seconds. Billy Murphy, his brother, in

days gone by was almost as famous as a cycle racer. He has been mixed up with automobiles during recent years as a millionaire's chauffeur and manager of a storage station. The boys say they have run the tandem a half-mile in 27 seconds, and think that with confidence that will come from further practice they will have the nerve to pilot their wonder under 40 seconds for the mile. They do not doubt its practically limitless speed and declare it is only a question of letting it out and holding to the road without accident. In view of "Mile-a-Minute" Murphy's railroad feat there is little fear of his losing his nerve.

The twin boilers of the steam bicycle have been tested to a pressure of 360 pounds each. The engine is double acting, with cylinders 2½x3½ inches and a 3½-inch stroke. It is equal to 2,500 revolutions a minute. The transmission is effected by chain and sprocket, the driving wheel having the same number of revolutions as the engine.

LOOPING THE LOOP

Learned Professors Watch the First Public Performance and Retire in Amaze

Diavolo, the professional name of the cyclist whose "looping the loop" performances was lately described and illustrated in *MOTOR AGE*, made his first public appearance with the Forepaugh circus at Madison Square Garden last week. The master of ceremonies led out into the ring among the clowns a delegation of mathematicians, scientists and anthropologists, to give them a special side view of the human convolutionist. He quieted their nerves by telling them that Diavolo had done his act successfully forty times—twice yesterday before the show—and concealed the fact that two ambulances were waiting outside. Diavolo looks like a seven-footer, and came out from the wings in a suit of scarlet armor, with two devilish spikes sticking out of his temples. These were meant to pinion him hard and fast to the tanbark and keep him from jolting in case he slipped a cog while Jupiter was smiling at the soles of his feet. He mounted the long chute to the roof of the garden, and the scientists took out their notebooks. His bicycle was nickel-plated and had no pedals. Somebody in the band turned on the kettle drums and he was off. The spectators saw the barrel-like section of the track make a red convolution—and Diavolo shot out across the tanbark. One of the Park Row scientists had calculated that his lunar avoirdupois at perihelion was ten pounds six ounces, and the audience swallowed their hearts again. The ambulances drove home.

SPEEDY MEN AT CHARLES RIVER

Interested Crowds Watch Them Training—Some of Them Also Operate Automobiles

Extraordinary interest is taken by the Boston public in the doing of the racing men at Charles River park. An exciting tumble occurred a few days ago when Bur-

rows and Neville were pacing Nat Butler. Butler was hanging on at a 1:39 clip, when the rear tire of the pacing machine burst, and the tandem and pacing team were thrown. Butler was fortunate enough to escape what might have been a severe fall. Neville and Burrows were badly scraped. Burrows took a motor bicycle and Butler followed him several miles. The old-timer is certainly traveling fast.

Charles McConnell, the ex-amateur, took a 10-mile workout behind Austin Crooks and Fred Hoyt, Harry Elkes' star team. McConnell rode well and kept his miles close to 1:40.

Otto Maya followed "Dutch" Waller 15 miles at a fairly fast clip, and shows that he is fast rounding into form. Simar also did 15 miles behind Waller, and his miles were all under 1 min. 50 sec.

In addition to the hour race, heats race and 10-mile open, on April 19, there will be a match race between owners of steam carriages. The men threatened with becoming racing chauffeurs are J. W. Piper, of Waltham, and C. A. Hopkins, of Wellington.

The race will be 5 miles, the carriages to start from opposite sides of the track.

OPENING AT VAILSBURG

Racing to Commence Sunday Under The Management of the New Metropole Cycling Club

New York, April 6.—Racing will begin at the Vailsburg track next Sunday. The announcement of the opening of the season two weeks earlier than was expected has increased largely the number of professionals and amateurs training at the track. The weather has been rather unfavorable for preparation; but the professionals at least have done so much riding during the winter in the indoor six-day contests and at Atlanta that a week of warm weather will enable them to put the finishing touches to their training.

The first of the events to be promoted by the Metropole Cycling Club in its campaign of revival of the bicycle boom will be a coasting contest on May 10. It will be run on the Boulevard Lafayette in the neighborhood of 175th street, permission having been obtained from President Cantor, of the borough of Manhattan. Among the prizes given by manufacturers and local dealers are several bicycles.

The Kings County Wheelmen, of Brooklyn, have begun preparations for their annual race meet to be run as usual at Manhattan Beach the last Saturday in June. A big amateur handicap with notable prizes is among the events suggested. Edwin Forrest will be the club's amateur pace foreman this season.

The Opening of the Season

Paris, March 24.—(Special correspondence.)—Yesterday a nice sunshine, sandwiched between two showers, favored the first gathering of the season at the Parc des Princes, when the preliminary round of the Easter Grand Prize came in for decision in presence of a large attendance. To make a long story short,

we will simply put down the number of the fortunate seven who qualified for the second round: Ellegaard, Arend, Bourotte, Jacquelin, Eros, Conelli, and Heller. Heller's and Conelli's wins were the bright features of the day's racing. Also ran: Grogna, Rutt, Domain, Dangla, Prevot, Van den Born, Vasserot and many others. The 10-kilometer lap race was won by Bourotte, while the tandem race fell to the lot of that excellent pair, Mayer-Rutt. To sum up the day's doings, the sport was good on the whole, especially so in consideration of the early date.

Century Riding Continues Popular

The road riding season has fairly opened. The number of riders seen on the Chicago boulevards encourages the belief that riding will be more general than for some years past, while in the east the turnout was remarkable. The New York state division of the Century Road Club held an informal century on Long Island, two divisions taking part.

Although April, as a rule, sees the opening of the century season, it is believed that three times as many were ridden before the end of March as had been the case in the last 2 years. John G. Stiefel, of Buffalo, leads, but he is closely pressed by J. Thomason, of Brooklyn. Another Buffalo rider, A. J. Meyer, is third on the list. Henry Veit, of Brooklyn, is another whose century record is good this year.

The competition for the April medal began promptly on the first day of the month and will continue throughout the month. The award will be made the following month, immediately after the decision is rendered by the state officers and committees.

People Say Yes, Police Say No

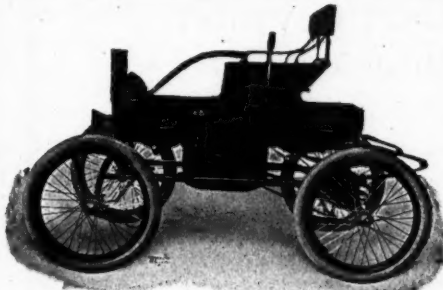
A dreary road, 50 kilometers in length, near Sezanne, has frequently been used by French record breakers and no difficulty has been experienced until recently because the region has not a single house and only by the merest chance does a gendarme pass that way. Osmont's trials, however, have attracted the officials and when, recently, that rider appeared upon the scene he found the road in possession of gendarmes, and was threatened with all sorts of pains and penalties if he exceeded the legal limit of speed. The inhabitants of Sezanne resented the interference and showed by the reception they gave to Osmont that they were entirely favorable to automobilists using the road. Near Chateau-Thierry lately Osmont covered 2 kilometers—1.24 miles—in the remarkable time of 1 m. 12 s., which is equal to about 62 miles an hour. He then rode up a gradient a little more than a mile in length, and having a rise varying from 7 to 9 per cent, in 1 m. 28 s.

Activity Among the Lincolns

On Sunday next it is expected there will be a great turn out at the first run of the season of the Lincoln Cycling Club, the one organization in Chicago which has been steadfast and true through all the vicissitudes

THE BAKER

IF IT'S A BAKER IT'S THE BEST
The Most Efficient of all Electric Vehicles



THE LIGHTEST WEIGHT
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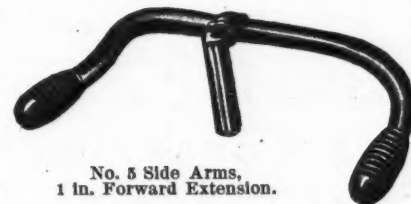
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No. 3 Arms, Regular Stem.



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No. 4 Racing Arms,
2 1/4 in. Forward Extension.

It will pay all manufacturers these times when competition is hot, to see that their wheels are equipped with just the attachments demanded by the rider. Every rider knows the merits of KELLY BARS, as they have been for the past six years the most popular and foremost sundry in the cycle trade.

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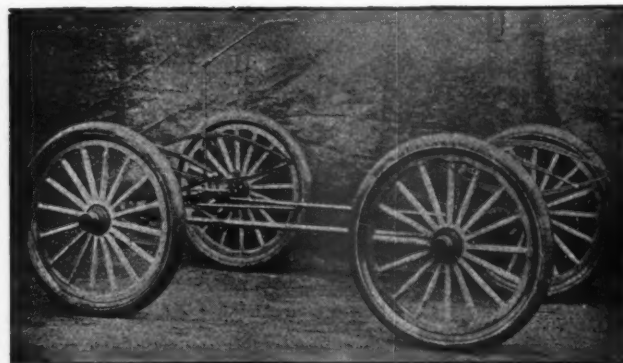
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Wheels, * Solid Rubber or
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Our Spring Block Bearing [is Self-Adjusting

and you ought to have it. It is made for revolving axles and is pivoted between the bearing and spring block, enabling the bearing to move free and easy with the axle always.

Our Catalogue tells all about it.

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of cycling. The captain, Dr. H. H. Hayes, has called a run to North Edgewater. The following Sunday a tour will be made of the south side boulevards and on later dates there will be runs to Oak Park and Maywood. In August a century will be made and later the members will ride to Milwaukee, Starved Rock, Fox Lake and elsewhere. The members of the Lincoln intend to show that they have not kept their club alive and prosperous all this time for nothing, and that with the cycling boom they expect to retain the leadership to which they are entitled.

Cyclists in the Dominion

The executive committee of the Canadian Wheelmen's Association will hold the annual meet at Toronto on Dominion Day. This was decided at the annual meeting held in Toronto a few days ago. Secretary Howson announced that the executive had decided to give a series of premiums to organizers through the country who would get up clubs varying in size from 40 to 100. Chairman Rubenstein, of the membership committee, reported that there are 1,100 wheelmen connected with the association.

Officers were elected as follows: President, A. F. Webster, Toronto; vice-president, O. I. Spencer, Vancouver; chairman membership committee, Louis Rubenstein; chairman rights and privileges committee, Dr. Mark G. MacIlhinney, Ottawa; chairman rules and regulations committee, George A. Kingston, Toronto; chairman roads and touring committee, G. S. Percy, Toronto; chairman transportation committee, R. J. Wilson, Oshawa; chairman Dominion racing board, George Ayling, Montreal.

Promoting a Coasting Contest

The Metropole Cycling Club of New York, which, as has already been reported, is largely composed of veterans with a desire and a determination to increase the interest in cycling, has arranged a coasting contest which will occur on Boulevard Lafayette on May 10. The course is a little more than a half-mile long, the summit being about in line with 175th street and overlooking the Hudson river. The surface is hard and smooth, and the course is in every way well adapted for just such a contest. Chairman Ibbeken, of 27 West 124th street, is enthusiastic over the prospects. Although it is one of the best and most picturesque roads on Manhattan Island, it is a peculiar fact that Boulevard Lafayette is little known to and little frequented by cyclists. Comparatively few are aware that such a beautiful highway is within easy reach.

Want Cycle Paths Improved

The Associated Cycling Clubs of Long Island are working strenuously to have the Coney Island cycle paths repaired so that they will be fit for riding within a short time. The matter has been brought to the attention of Park Commissioner Young, who is expected to

take the matter up at once. The cycling clubs claim that the little expense necessary to place the paths in first-class condition will be more than repaid by the enjoyment received by the wheelmen using them.

Rode Every Day in Three Years

Not less than 20 years ago W. D. Wilmot, then a trick rider of great renown, entered into an undertaking to ride a bicycle every day for 12 months. Wilmot, who is now a dealer in Massachusetts, remembers well, no doubt, what a great undertaking it was in those days, and it is probable that the men who have accomplished the feat are few. One man, however, went to bed on the last day of March with a record of 3 years' daily riding to his credit. He is Lincoln Holland, who has been well known in the trade at Worcester, Mass., for many years. Regardless of weather he has taken a daily ride. Unfortunately he did not keep a record of the total for the first 2 years, but in the 12 months of 1901 he covered 5,600 miles.

Harry Elkes will ride his first race in Paris on Sunday next. He will have for competitors in the hour struggle Robl, of Germany, who holds the world's hour record of 40 miles 1,251 yards, made at Leipsic on June 30, 1901, and Emile Bouhours, the best pace follower in France.

Rivierre, known among cyclists as the "grand old man of France" by reason of his wonderful performances in many long-distance races, is reported to be in possession of a motor cycle whose frame is built of hardened gelatine produced from hides by a process invented by M. Parisot, a Parisian chemist.

Boston has an Interclub Cycle Racing Association, consisting of over a dozen clubs. A race will occur during the summer for the club championship and an interesting fact about the event is that none but novices will be allowed to ride on any of the teams.

For the last 2 years Pittsburg has had a squad of bicycle police which has proved so effective that it has been increased to twenty men. The officers detailed on this particular line of duty are expected to look after houses made vacant during the summer months, to guard against too fast riding or driving in the parks, and to protect the residence district of the city from sneak thieves and other offenders.

The spring rush of the cycle trade in Chicago is responsible for a scarcity of repair men. At least two large establishments in the city have been unable to obtain men, and one of them was so pressed that it was necessary to send east for mechanics.

The William Hengerer Co. has been obliged, by reason of the magnitude of its retail business, to open a cycle store at 611 Main street, Buffalo. The company's highest priced machine, the Buffalo King, sells at \$35 and a cheaper model at \$25. The same guarantee goes with each.

Amateur Builders of Autos

WAUKESHA, WIS.—Captain William Agnew is constructing an automobile for Dr. A. J. Hodgson, of this city, on plans supplied by the doctor.

MT. VERNON, IND.—Wm. Gonderman, foundryman, has made an automobile and given it its first trial. It is run by a 2½ horse power engine and will run twenty miles an hour.

TERRE HAUTE, IND.—Claude Cox has his automobile under good headway. A few more weeks and it will probably be seen on the streets.

MARYSVILLE, O.—John Scharf has invented and built an automobile, the first one in Union county.

OWOSSO, MICH.—Lewis and Percy Fulmer, of this city, have built a steam automobile. The power of the machine is applied by friction to a large wheel on the rear axle. A trial trip was made and the machine is pronounced practicable.

ITHACA, MICH.—J. P. McKay, of Alma, has been in Ithaca locating a building in which to locate a bicycle store and repair shop.

NORTH ATTLEBORO, MASS.—The T. I. Smith Co. has had a man at work for some time on the construction of a machine which will be put on the market if it is a success. A. H. Bliss has also had for some time a man at work. The Bliss automobile will be finished in another week.

MIDDLETOWN, CONN.—Russell Frisbie has completed an automobile on which he has been at work for nearly a year. It weighs about 1,000 pounds and will accommodate 4 persons. It is equipped with an 8 horse-power engine.

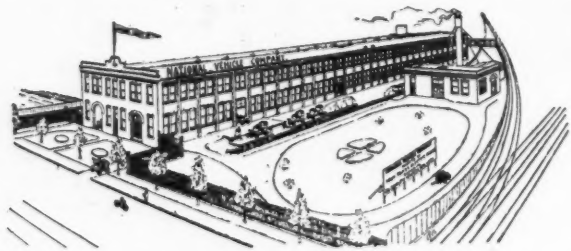
DARTFORD, WIS.—Wells Brooks, a steamboat builder of Dartford, has recently completed an automobile which is pronounced a success.

MARSHALLTOWN, IOWA.—Will Franklin has made and tested a gasoline machine. It will travel 25 miles an hour and carries a gasoline supply for 75 miles.

THE NATIONAL ELECTRIC FACTORY

Is Exercising Its Splendid Facilities by Working Overtime—Foreign Orders Received

The factory of the National Vehicle Co., at Indianapolis is a busy one. It is running a large force of workmen, and putting in considerable overtime, in order to meet the demand for National electric vehicles. The illustration of factory is an excellent reproduction of this plant. The building is 350 feet long by 75 feet wide, exclusive of the engine, boiler and dynamo room,



which are separate from the main building. The entire equipment of the factory, from the office to the engine room, is first-class in every particular. The latest designs in accurate machine tools, are to be found in

the mechanical department, while up-to-date methods are in vogue in painting, finishing and assembling shop. The railroad switch connecting as it does with the Belt R. R., which in turn gives the company direct connection with every railroad entering Indianapolis, enables them to load automobiles at their own door, and to ship direct to any point in the United States. The company reports an increasing demand for Nationals in foreign countries, quite a large portion of their mail the past few weeks being from across the sea. The selling department of this company is well organized, and the travelers now on the road have recently placed some nice orders in the larger cities.

CYCLE CLUB ADMITS AUTOMOBILISTS

Mingling of the Sports by the Kings County Men Expected to Prove Beneficial to Both

New York, April 7.—The Kings County Wheelmen, who have a fine clubhouse on Grant Square, Brooklyn, have changed their constitution to embrace all outdoor sports. They propose to turn their wheel room into a storage station for their automobiling members.

"We can store sixty automobiles on our main floor, which is 75x34 feet," said President Needham to a MOTOR AGE man. "We are not seeking automobile members, though. We prefer to pick them, so that our motor vehicle membership shall bear the same relation of gentlemanly amateurism to the new sport as our cycle membership has always borne to the old. We do not care for a mere collection of people bound together for trade purposes, but seek rather professional and business men having other than merely a trade interest in automobiling. We have a fine clubhouse to offer, in a fashionable quarter of the city, with all the luxuries and conveniences to be found in an up-to-date social club. Cycling has by no means died out among our members, but of late years most of them have preferred to keep their wheels at their homes, and we can thus, without inconvenience, give up our room to automobiles."

ENDURANCE THEIR STRONG POINT

Many Entries Have Been Made by Makers for the Long Island Club's Test

New York, April 5.—Entries are now coming in rapidly for the endurance run of the Long Island Automobile Club on April 26. Those formally made to date are:

W. H. Wells, Passaic (Prescott, 4½-horsepower); H. M. Wells, Passaic (Prescott 4½); C. J. Field, New York (two Darracq machines of 9 and 6-horsepower respectively); International Motor Car Co. (Toledo, 7½); A. G. Southworth, Brooklyn (Toledo, 7½); Percy P. Pierce, Buffalo (Pierce Motorette, 3½); George M. Brown, Hartford (Haynes-Apperson, 9); H. B. Apperson, New York (Toledo, 7½); Lane Motor Vehicle



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is the better kind.

Better for the delicate mechanisms and better for you to sell. Ask for trade prices and catalogue.

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By injecting one tube of **Automobile Neverleak** into each of your tires your tire trouble will absolutely cease. **Automobile Neverleak** will preserve the rubber and fabric and will not prevent plugging or vulcanizing, should a severe accident render such repairs necessary.

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That
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REMEMBER that purchasers of the "Long Distance" are guaranteed positive elimination of "tire troubles." Thousands of satisfied users testify to its superiority over all others. Send for booklet of testimonials from prominent automobilists.

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Fournier- Searchmont Gasoline Automobiles

*Are Recognized as
the Most Satisfactory
for All-Round Use*

For speed they hold all records; for hill climbing they are unequalled; for economical and effective service they are unsurpassed. There are numerous Gasoline Automobiles, and many good ones, but there is only one BEST, and that is the

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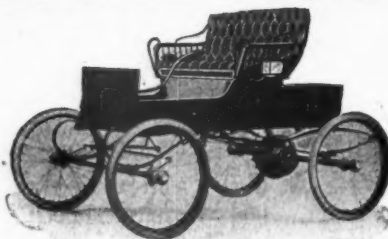
Our exhibit at the Chicago Show was the center of attraction, and everywhere could be heard the same expression of opinion: "It is the *Finest Automobile at the Show!*" If you, as a dealer, desire to handle a motor vehicle which will establish a large and lasting business for you, write to the

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Catalog on Application

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Model 60. Price \$850.

Eight Models at prices ranging from \$850 to \$1100

Our vehicles are in no sense experimental. We have had years of broad experience in all lines of automobile work and have applied to our product the best modern practice in every detail and particular. :: It is our purpose to establish agencies in all important centers, and we are prepared to consider applications from persons having sufficient capital and suitable facilities for the proper conduct of the business.

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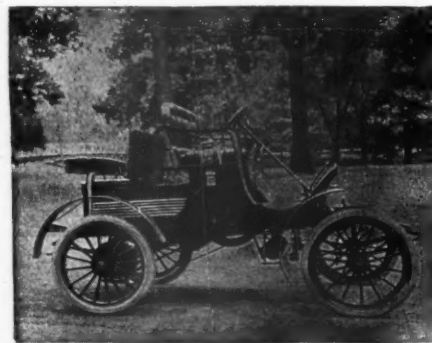
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THE KIND YOU WANT
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New England Representative
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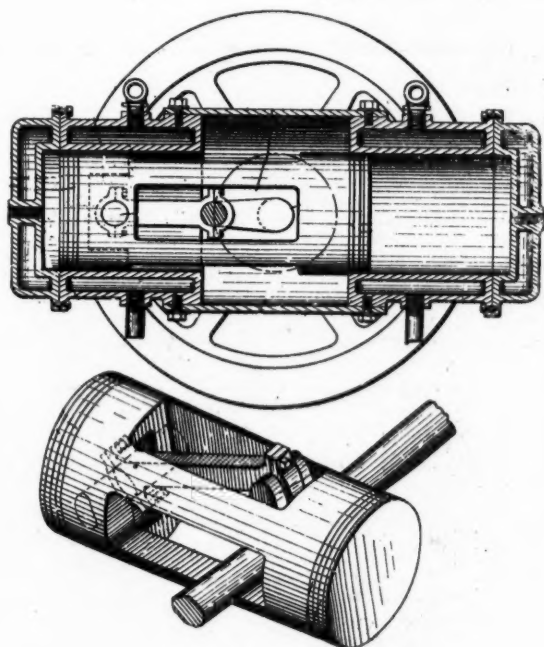
Co., 4-horsepower and 9-horsepower surrey; J. Insley Blair, New York (Panhard, 15); Peerless Mfg. Co., (Peerless, 16); and Overman Automobile Co., a 3,000-pound 14-horsepower steamer.

The committee has also received letters from the following in reference to making entries: Smith & Mabley, White Steam Carriage Co., Foster Steam Wagon Co., Century Motor Vehicle Co., United States Long Distance Automobile Co., Regent Automobile and Machine Co., Automobile Co. of America, Robinson Automobile Co., Waltham Mfg. Co., Wheel Within Wheel Co., and Passaic Metal Ware Co.

Mr. Mabley, of Smith & Mabley, told a *MOTOR AGE* man this week that beside two Panhards his firm would enter a 15-horsepower Charron-Girardot-Voigt imported vehicle. "Of course," said he, "we could not finish one of our C. G. V. American models quite so soon, but the foreign and domestic models will be the same in every part." O. H. P. Belmont will enter his new 40-horsepower Panhard-Levassor in the run.

Compact Gas Engine

H. N. Motsinger, of Pendleton, Ind., has designed an engine, the main object being compactness and reduction in the number of the parts in motors of the opposed cylinder type. The principal characteristics may be seen from the illustration, which shows a vertical



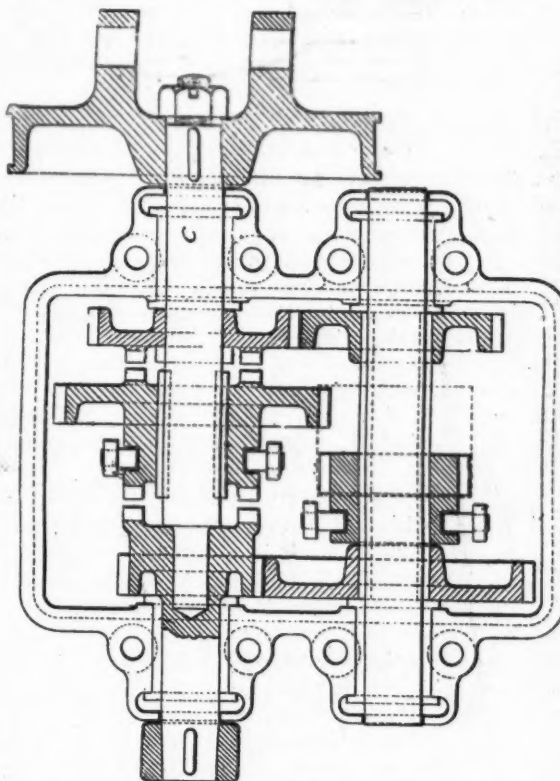
Motsinger's Engine.

longitudinal section on the center line of one pair of cylinders and the double piston with connecting rod and a portion of the crank shaft. While compactness is the main feature an additional advantage is that the continuous piston, with its long bearing, has a

much more even bearing in the cylinders than in the case of pistons of the usual length.

Govan's Transmission Gear

Alexander Govan, of Glasgow, Scotland, has designed and taken out an American patent on a transmission gear that possesses some good features and some that are objectionable. It is compact and simple, is entirely



Govan's Driving Gear.

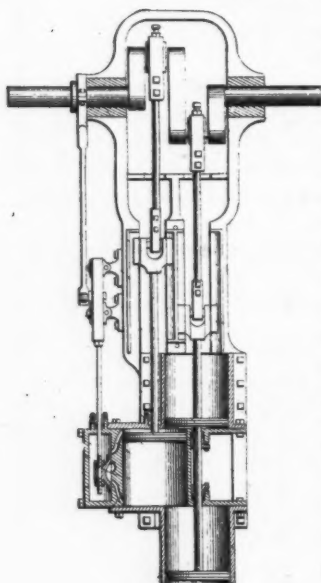
contained in a dust-proof case and is controlled by one lever by means of a cam which imparts the necessary motion to the adjusting members, but has the unpleasant feature of changing from one drive to another by means of positive clutches and throwing moving gears into mesh. The driving and driven shafts are in axial alignment and are practically one shaft divided near one side of the case and provided with a socket joint. The driving portion of this shaft is fitted with a spur gear and a clutch, as shown in the illustration. Rotatably seated on the driven portion of the shaft is a similar gear and clutch near the side of the case opposite the gear and clutch first mentioned. Slidably feathered on the driven shaft between the two gears is a spur gear, the hub of which is provided at each end with clutch members adapted to engage the clutches on the other two gears. Near the center of the hub is an annular groove adapted to receive a yoke by which the gear may be moved longitudinally along the shaft and put in rigid connection with either of the other gears by their respective clutches or may be retained in a central position, in

which position the motor may run free without imparting motion to the driven shaft.

Journalled in the case, parallel with the shaft described, is a secondary shaft containing two gears respectively in mesh with the two gears above described. On the central portion of this shaft is a gear, feathered on the shaft and capable of longitudinal movement, adapted to mesh with the gear on the central portion of the driven shaft and provided with the necessary groove and yoke to control its movement. If the movable gear on the driven shaft is placed in a position where it becomes connected with the clutch on the end of the driving shaft it will partake of the motion of that shaft as though rigidly connected to or a part of it. If the central gear be moved in the opposite direction and brought into clutch connection with the gear journalled on the driven shaft motion will be imparted through the chain of gears comprising the gear on the driving shaft, the two on the secondary shaft and the one on the driven shaft now rigidly connected thereto by means of the movable gear and the intermediate clutch. Should the central gear on the driven shaft be returned to the central or disengaged position and the movable gear in the secondary shaft be moved to a point where the two gears are in mesh motion will then be imparted from the secondary shaft through these two gears at the slowest speed within the range of the gear.

For the reverse drive the movable gear on the driven shaft is retained in the central position and the movable gear on the secondary shaft is held out of engagement with the former and a loose pinion carried on an eccentric stud having its bearings in lugs on the cover of the case is thrown into engagement with the two movable gears, thereby causing the driven shaft to rotate in the direction opposite to that of the driving shaft.

Three Cylinder Steam Engine.



The Darby Engine.

A. A. Darby and W. L. Darby of Vidalia, Georgia, are joint inventors of a three cylinder steam engine of unique design. The cylinders are arranged end to end in overlapped relation, the central or intermediate cylinder communicating with each of the others. A single piston rod extends through the two outer cylinders which are centrally aligned. Upon this piston rod are arranged two piston heads, one in each cylinder and the inner end of the piston rod is secured to the usual cross head. The intermediate cylinder is provided

with an independent piston and rod with cross head and connections. The intermediate cylinder is of the double acting type, that is, steam is admitted at each end of the cylinder and acts on both ends of the piston while the other cylinders are both single acting and are without valves, as they work in conjunction with the central cylinder, a single slide valve of the ordinary type serving for all three cylinders. In operation the steam enters between two piston heads instead of between one piston and the cylinder head as in the usual construction and thus the steam expands quickly in both cylinders and drives the pistons in opposite directions. The result of this construction and relative arrangement of the cylinders and piston heads is that an equal pressure is imparted to each of the cranks. It will be readily understood that the outer cylinders act alternately in conjunction with the central cylinder.

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Advertisements under this head 5 cents per word first insertion; 3 cents per word each insertion thereafter. Cash with order. Express orders, postoffice orders or stamps received.

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FOR SALE—Marsh motor cycle; price \$95; photos and further information on application. CHAS. BREUNIG, 412 North Broadway, St. Louis, Mo.

FOR SALE—4½x6 gasoline motor, water jacketed throughout. Automobile repairs. W. B. MURRAY, 1253 Milwaukee avenue, Chicago.—17.

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WANTED—Man with some practical manufacturing experience in the line to take charge of automobile factory. Must be a man capable of taking hold of a partially completed gasoline machine and developing it and be capable of making such drawings and sketches as may be necessary for getting out parts, etc. Must be willing to take hold of the work at a reasonable compensation, to be increased as the business develops. Address Ohio, care MOTOR AGE, Monon Bldg., Chicago.

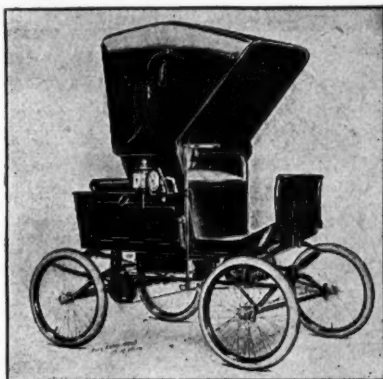
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* * *



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They are past the experimental stage.
Practical, Durable, and built for service.

Send for Catalogue.
Desirable Agents wanted.

The Conrad Motor Carriage Co.,
1417 Niagara St., Buffalo, N. Y., U. S. A.

Model 65.



No expert mechanic or engineer is required to
operate and keep the

"Toledo" Steam
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in perfect condition. Although rich in superior mechanical features, simplicity of design and construction are its chief advantages over all other automobiles on the market. Single lever control :: Automatic Fuel Regulator :: Engine Driven Air and Water Pumps :: All Running Parts enclosed in Dust Proof Cases.

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50% of all the
American
Autos are

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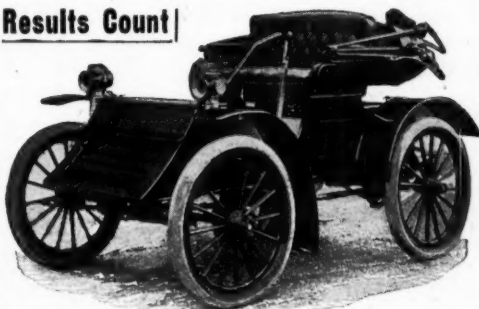
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Because experience has proven that they are
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made. Our catalogue telling you all about them
will be sent free.

The Mason Regulator Co.

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Results Count



The Haynes-Apperson Automobile

OLDEST GASOLINE AUTOMOBILE MANUFACTURERS IN AMERICA.

ALL OUR RECORDS HAVE BEEN MADE WITH STOCK MACHINES. :: Two Machines entered. :: Two Machines receive first certificate. :: Two Machines make higher average than any other machines made in America —our record in New York and Buffalo endurance test. :: First Prize Long Island endurance test. 100 miles without a stop. :: First Prize Cup Five-Mile speed contest, Fort Erie track, Buffalo, N. Y. :: First Prize Cup Ten-Mile speed contest, Point Grasse track, Detroit, Mich. :: Gold Medal Pan-American Exposition. :: Every machine we have ever entered in any contest has won first place. No failure mars our record. We believe this is not true of any other make in the world. :: Write for Catalogue.

The HAYNES-APPERSON CO.,

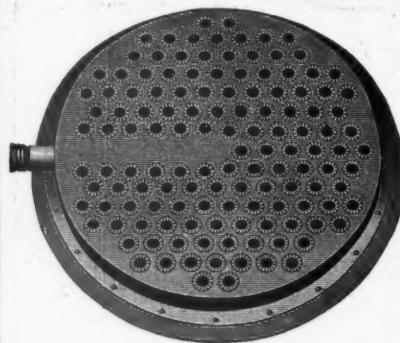
KOKOMO, INDIANA,
U. S. A.

The WOODWARD BURNER

**We Believe In It and Recommend It
Buyers Believe In It and Recommend It**

Faith in one's own product is one of the secrets of success in marketing. We have unqualified faith in THE WOODWARD BURNER. :: It has a record of **Fifteen Miles on One Gallon of Gasoline.** :: Its construction is scientific. Its top plate is flexible and Tubes screw in bottom plate, and if for any cause Tubes have to be removed all that is necessary is a wrench. It makes no carbon. It cannot backfire—absolutely impossible. It makes steam so that even on hills you have enough and to spare. Its flame is blue and twelve inches long, which means that it gives more heat than other burners. It is durable—will last as long as any other part of the vehicle. We guarantee this. :: For proof of any and all claims here made we refer to the boiler itself. :: It will prove them to your satisfaction if you will give it a trial.

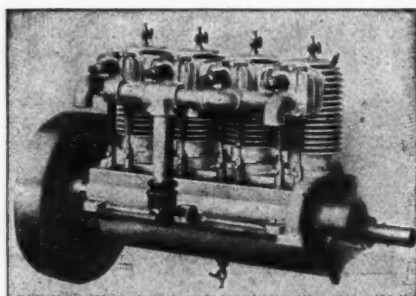
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"The Rutenber"

**Upright Gasoline Motors
Both Air and Water Cooled**

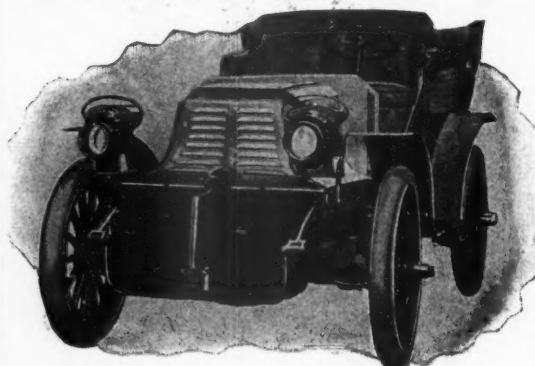
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From 1 to 150 Horse Power**



Also AUTOMOBILES of Every Style.
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GASMOBILE



1902 Touring Car. 4 Cylinders.

IMMEDIATE DELIVERIES.

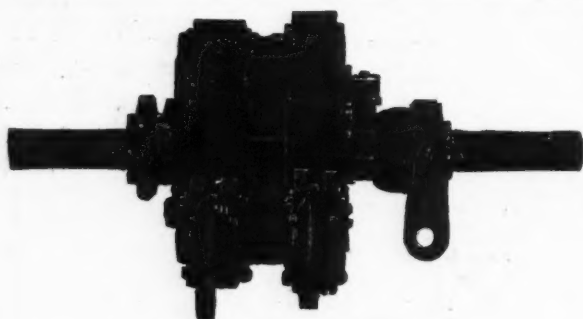
Stanhope, Surrey, Tonneau and Limousine Types. Prices for new vehicles from \$2,000 to \$5,000. Second Hand Demonstration Carriages from \$700 to \$1,800. :: :: ::

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and Most Reliable AMERICAN
BUILT Gasoline Carriage :: ::

AUTOMOBILE COMPANY OF AMERICA

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UPTON SPECIAL.

Transmission Gear.

**TWO SPEEDS FORWARD
AND A REVERSE**

Satisfaction Guaranteed Write for Circular

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HAND LANTERNS.

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ALUMINUM REFLECTORS
(Locomotive Class)

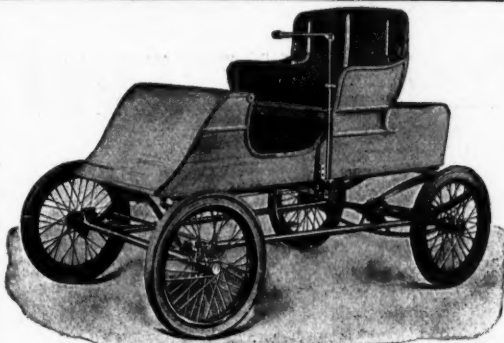
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AND
GUN METAL
FINISH.

See the New Gun
Metal Finish.

20th CENTURY Mfg. Co.

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Model A.

Model A.	3 Passengers.....	Ready for Power
Model B.	4 Passengers.....	\$425.00
Model C.	Surrey.....	650.00
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Model F.	6 Passengers.....	750.00

Can furnish parts for any of the above models, including Mechanical Tires, complete sets of Wheels, Running Gear, Bodies, six models, Entire Wagon ready for power including Brake and Steering, furnished in best baking enamel on all metal parts. All wood parts best varnish finish. Upholstered in leather or cloth. Also Reachless Running Gears, and specially designed bodies for gasoline vehicles.

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THE OLDSMOBILE RUNS EVERYWHERE

It's the thoroughly practical Motor Vehicle—emphasize that word *practical*—for every day in the year. Spring, Summer, Autumn, Winter, The Oldsmobile is always instantly ready for starting, with the power to keep everlastingly going. Price \$650, f. o. b. Detroit

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Detroit

"THE DAYTON" RUNNING GEAR

Pat. June 4, 1901.

COMBINES

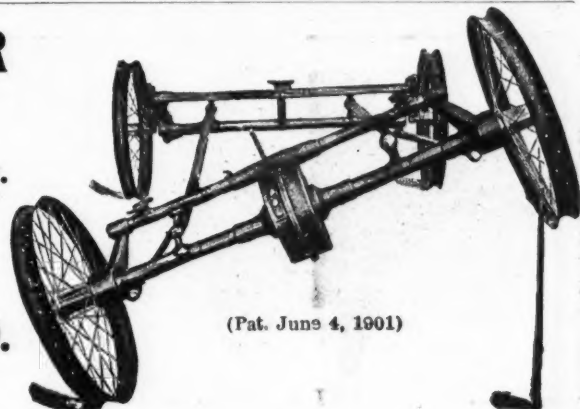
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We make Engines, Boilers, Burners and full line of high grade Steam Fittings for Automobile construction.

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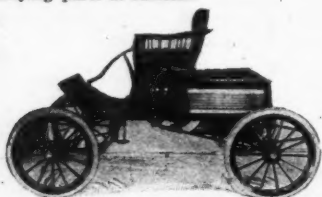
THE DAYTON MOTOR VEHICLE CO.

DAYTON, - OHIO.



(Pat. June 4, 1901)

DON'T EXPERIMENT Get an outfit which is designed to go together. You can't make a successful machine by buying parts at random.

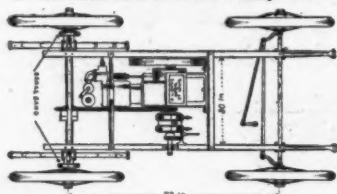


DYKE'S No. 1 AUTOMORETTE, Made Up Complete.

We supply you with all the parts to build this machine. We also supply parts for a machine size smaller; also for a Tonneau. This No. 1 Outfit (with old style transmission and old style ignition and a 5x6 cylinder) has been on the market for three years and we have customers from Maine to Mexico, and with the exception of one they are all pleased. Since our new transmission, new jump spar, system of ignition and new 5 1/4 x 6 cylinder with head and cylinder all in one casting has been added it makes Dyke's No. 1 Automorette the finest machine of its size in America. Some of the leading makes of machines were copied from this outfit.

CHAS. E. MILLER, 97 Reade St., N. Y. Representative.

Dyke's Flexible Reachless-Running Gear has no equal. It is patented. Make note of Brake Pulley



Top and plan view. Showing manner in which engine, etc., is mounted.

DYKE'S 6 H.P. HORIZONTAL TYPE ENGINE Cylinder and Head All in One Casting.

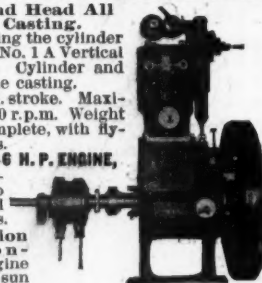
We are now using the cylinder as used in our No. 1 A Vertical Type Engine. Cylinder and head all in one casting.

5 1/4 bore, 6 in. stroke. Maximum speed, 900 r.p.m. Weight of Engine complete, with flywheels, 275 lbs.

DYKE'S No. 1 6 H.P. ENGINE,

with transmission giving two forward and reverse speeds.

Transmission direct connected to engine shaft, and of sun and planet type.



Full Line of **AUTO SUPPLIES** of Every Description.

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Tires Free from all features liable to cause trouble, are **MUNGFER NON-COLLAPSIBLE PNEUMATIC TIRES.**

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Is the recognized Standard for Automobile and Bicycle construction.

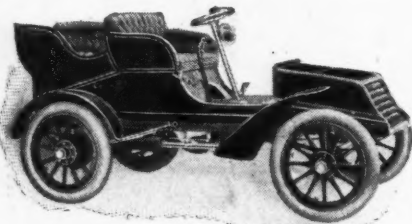
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Present season's Winton product is backed by a long service in the construction of successful high-grade automobiles. There is not one experimental feature to contend with. Every part has been thoroughly tested out, and the Cars, as put upon the market, are the best result of mechanical science practically applied, experienced and practical workmanship and expensive structural materials. The "waiting list" is not long; your name can be reached early. **Get Our Catalog.**

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Flexib's Reachless Running Gear




"The Milwaukee" **MOTOR VEHICLES**

ARE
"THOROUGHLY EFFICIENT"

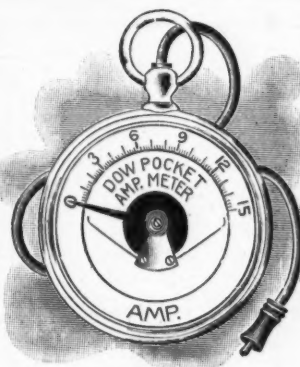
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 MILWAUKEE
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We will have these famous sparkers on exhibition with the P. J. Dasey Co. and the Automobile Equipment Co., and they can be seen in active operation on the Winton, Elmore or Stearns carriages.



DON'T FAIL TO INVESTIGATE THIS
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 83 S. St. Clair St., DAYTON, OHIO
 Chas. E. Miller, 97 Reade st., New York City, carries a complete stock of our goods.



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 Adapted to Marine, Automobile and Stationary Engines.

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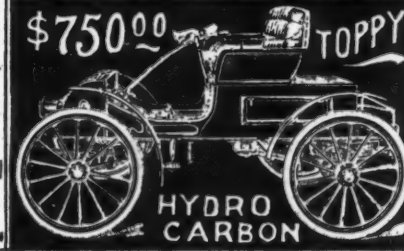


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STRONG LIGHT COMPACT SIMPLE SOLD THROUGH AGENTS ONLY.

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Dyke's Wheel Steering Device
Can be Attached to Any Vehicle
WOOD WHEEL WITH ENTIRE DEVICE
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ELECTRIC CHARGING PLANTS
For AUTOMOBILES and LAUNCHES
"SELF STARTING"
Write us for prices etc.
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THE BALDWIN Has been adopted
by leading makers

3/4 Pitch.
3/8-inch. Wide.
Tensile
strength
4,000 lbs.
K. FRANKLIN PETERSON,
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BALDWIN CHAIN CO.,
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STANTON STEAM CARRIAGE.

The Stanton Mfg. Co. claims that in its carriage
are combined the qualities of workmanship, ma-
terial and mechanical ap- **The Ideal Motor Wagon**
pliances that go to make
STANTON MFG. CO., Waltham, Mass.



"D. & J." HANGERS
FOR
**SINGLE,
TANDEM,
TRIPLET,
QUAD and
MOTOR CYCLES.**
ABSOLUTELY THE BEST
Lightest, Nearest Dust Proof, and Easiest Fun-
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PARK CITY MFG. CO. (Inc.) :: CHICAGO



ABSOLUTELY NO LOSS OF POWER

And NO NOISE, with the **Weeber Muffler**

Made in all sizes. Low in price. Send for particulars.

C. F. WEEBER MFG. CO., Albany, N. Y.

AIR AND WATER PUMPS.

The Union Steam Pump Co., Battle Creek, Mich.
Has brought out a combined Air and Water Pump; also
a Single Air Pump, and a Single Water Pump for steam
vehicles. They are thought of favorably by those who
have used them. They are a sturdy, well-made machine.

MILLER ROLLER BOILER TUBE EXPANDER



For expanding 1/2-in. Copper
Boiler Flues in Automobile
boilers. \$3.50 Each.

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97 Reade Street, " " NEW YORK CITY

THE CINCINNATI PANEL CO.

Manufacturers of fine

Automobile Bodies

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Cor. W. Eighth St.
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We can quote a very interesting price
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Providence, R. I.



Sheet Metal Stampings

PRESSED STEEL BALL RACES

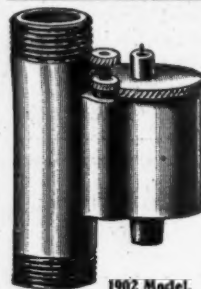
Stamped parts for Ball and Roller
Bearings. Write for prices and samples

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DIXON'S Graphite Compound

is indispensable for sparking plugs and for all pipe
connections on steam or gasoline automobiles. It
makes perfectly tight joints that can be opened at
any time with ease.

JOSEPH DIXON CRUCIBLE CO., - - Jersey City, N. J.



THE KINGSTON NOISELESS AUTOMATIC CARBURETER

If you have a gasoline engine that
troubles you, or a gas engine that you
wish to convert into a gasoline engine
you need this Carbureter, the only reli-
able system for automobile or bicycle
motors. Will stand any amount of vi-
bration, is noiseless, light; no valves in
motion when once adjusted to an en-
gine; never needs to be shut off or
changed.

KINGSTON MFG. CO.
Kokomo, Indiana.

1902 Model.

NOTHING CAN EXCEL A BUFFALO

For Easy Starting, Getting Away Quick, Swift,
Gliding, Noiseless Motion and Endurance . . .

The "Buffalo" we are talking about may not be the one you are thinking about, but it will apply equally well to both. We refer at present to our

Buffalo Sr.

Here it is

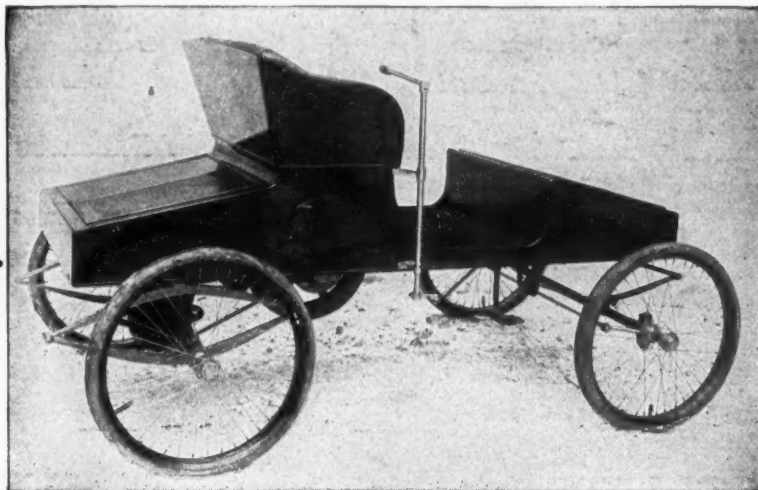


One ride will convince you.



MR. DEALER.

Come to our factory,
take a ride, and buy.

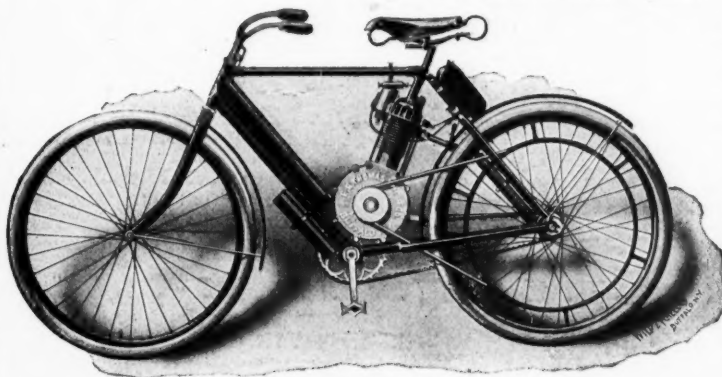


BUFFALO, SR. PRICE \$800

"AN AUTOMOBILE IS NO BETTER THAN ITS MOTOR"

We use E. R. THOMAS' WORLD'S RECORD MOTORS exclusively.

DON'T FORGET THE **AUTO-BI!** THE STANDARD MOTOR CYCLE
Largest Discounts to Good Agents.



MODEL 4, ROADSTER AND RACER, \$175

Two and one-half horse power motor, grip control, narrow tread, up-to-date equipment, full and substantial guarantee. Made in a factory especially equipped for the purpose. All parts are interchangeable.

AGENTS: Get the benefit of our wide experience. Don't take up an unknown quantity when you can get one already popular. One tried and not found wanting. Catalogue of three models ready.

BUFFALO AUTOMOBILE & AUTO-BI CO.,

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NOW IS THE TIME TO SECURE THE 1902 AGENCY
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BICYCLES

New Models. New Features

Racers, Roadsters, Chain, Chainless, Cushion Frames,
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